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=> s photographic or (silver(3w halide)
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=> s photographic or (silver(3w) halide)
         95264 PHOTOGRAPHIC
             5 PHOTOGRAPHICS
         95269 PHOTOGRAPHIC
                 (PHOTOGRAPHIC OR PHOTOGRAPHICS)
         72731 PHOTOG
           136 PHOTOGS
         72833 PHOTOG
                 (PHOTOG OR PHOTOGS)
        112987 PHOTOGRAPHIC
                 (PHOTOGRAPHIC OR PHOTOG)
        335182 SILVER
           139 SILVERS
        335238 SILVER
                 (SILVER OR SILVERS)
        154186 HALIDE
        130095 HALIDES
        224984 HALIDE
                 (HALIDE OR HALIDES)
         33432 SILVER(3W) HALIDE
L1      117904 PHOTOGRAPHIC OR (SILVER(3W) HALIDE)

=> s ((three or 3 or two or 2 or multi)(2w)photon) or multiphoton
       1058980 THREE
            55 THREES
       1059017 THREE
                 (THREE OR THREES)
       6931252 3
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    2413932 TWO
         45 TWOS
    2413964 TWO
              (TWO OR TWOS)
    9197162 2
     164895 MULTI
         11 MULTIS
     164903 MULTI
              (MULTI OR MULTIS)
     139864 PHOTON
      48435 PHOTONS
     165261 PHOTON
              (PHOTON OR PHOTONS)
      32058 (THREE OR 3 OR TWO OR 2 OR MULTI)(2W)PHOTON
      15180 MULTIPHOTON
         36 MULTIPHOTONS
      15191 MULTIPHOTON
              (MULTIPHOTON OR MULTIPHOTONS)
L2    43758 ((THREE OR 3 OR TWO OR 2 OR MULTI)(2W)PHOTON) OR MULTIPHOTON

=> s l1 and l2
L3        84 L1 AND L2

=> d l3 10,20,30,40

L3   ANSWER 10 OF 84  CAPLUS  COPYRIGHT 2007 ACS on STN
AN   2002:52791  CAPLUS
DN   137:48071
TI   Photorefractive polymers sensitized by two-photon
     absorption
AU   Blanche, P. A.; Kippelen, B.; Schulzgen, A.; Fuentes-Hernandez, C.;
     Ramos-Ortiz, G.; Wang, J. F.; Hendrickx, E.; Peyghambarian, N.; Marder, S.
     R.
CS   Optical Sciences Center, The University of Arizona, Tucson, AZ, 85721, USA
SO   Optics Letters (2002), 27(1), 19-21
     CODEN: OPLEDP; ISSN: 0146-9592
PB   Optical Society of America
DT   Journal
LA   English
RE.CNT  7     THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
              ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3   ANSWER 20 OF 84  CAPLUS  COPYRIGHT 2007 ACS on STN
AN   1998:746931  CAPLUS
DN   130:87632
TI   On the B-X transitions of expansion cooled silver
     halides
AU   Stueber, Guido J.; Foltin, Martin; Bernstein, Elliot R.
CS   Department of Chemistry, Colorado State University, Fort Collins, CO,
     80523-1872, USA
SO   Journal of Chemical Physics (1998), 109(22), 9831-9842
     CODEN: JCPSA6; ISSN: 0021-9606
PB   American Institute of Physics
DT   Journal
LA   English
RE.CNT  37    THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD
              ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3   ANSWER 30 OF 84  CAPLUS  COPYRIGHT 2007 ACS on STN
AN   1994:90462  CAPLUS
DN   120:90462
TI   Peculiarities of three-dimensional optical recording of binary-coded
     information
AU   Shteinberg, I. Sh.; Shchepetkin, Yu. A.
CS   Novosibirsk, Russia
```

SO Avtometriya (1993), (3), 89-95
CODEN: AVMEBI; ISSN: 0320-7102
DT Journal; General Review
LA Russian

L3 ANSWER 40 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1988:158901 CAPLUS
DN 108:158901
TI Some factors affecting quantum sensitivities of a silver halide emulsion
AU Spencer, Harry E.
CS Dep. Chem., Oberlin Coll., Oberlin, OH, 44074, USA
SO Journal of Imaging Science (1988), 32(1), 40-2
CODEN: JISCEJ; ISSN: 8750-9237
DT Journal
LA English

=> d l3 all 5-84

L3 ANSWER 5 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:1142461 CAPLUS
DN 143:105894
ED Entered STN: 28 Dec 2004
TI Time-resolved-photography and transient absorption spectroscopy of excited dielectrics by infrared ultrashort laser radiation
AU Horn, A.; Kreutz, E. W.; Poprawe, R.
CS Lehrstuhl fuer Lasertechnik, Rheinisch-Westfaelische Technische Hochschule Aachen, Aachen, 52074, Germany
SO Laser Institute of America [Publication] (2004), 96(Conference Proceedings - 1st Pacific International Conference on Applications of Lasers and Optics, 2004), 238-241
CODEN: LIAAED
PB Laser Institute of America
DT Journal; (computer optical disk)
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 53
AB Compared with laser radiation in the nanosecond regime, glass is modified using femtosecond laser radiation without cracking. The modification of the matrix structure of glass (BK7 glass, fused silica, and quartz) is investigated during and after irradiation with ultra short pulsed laser radiation (70 fs < tp < 3 ps) at the wavelength λ = 810 nm. Glass is heated by femtosecond laser radiation within the irradiation zone for many nanoseconds. The dynamics of absorption after excitation of fused silica and BK7 glass with femtosecond laser radiation is visualized by transient absorption spectroscopy. Focusing laser radiation with pulse durations in the picosecond time regime in sapphire generates free electrons with relaxation by emission of radiation or by formation of defects. The temporal and spatial emission characteristics are observed by high-speed photog. in the streak mode. The beam waist moves within the pulse duration towards the incident laser radiation by self-focusing and absorption by multiphoton processes. The dynamics of the long lasting stress formation is visualized by time-resolved Nomarski photog. The formation of a sound wave in fused silica and BK7 glass is observed and the mech. stress, depending on the excitation pulse duration, is measured.
ST excited dielec IR ultrashort laser radiation photog absorption spectroscopy; glass excitation pulsed laser radiation photog absorption spectroscopy; fused silica excitation pulsed laser radiation photog absorption spectroscopy; quartz excitation pulsed laser radiation photog absorption spectroscopy; sound wave fused silica glass pulsed laser radiation excitation; sapphire excitation pulsed laser radiation free electron relaxation emission

IT Borosilicate glasses
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(BK7; time-resolved-photog. and transient absorption spectroscopy of excited dielecs. by IR ultrashort laser radiation)
IT Laser spectroscopy
(absorption; time-resolved-photog. and transient absorption spectroscopy of excited dielecs. by IR ultrashort laser radiation)
IT Absorption spectroscopy
Sound and Ultrasound
(laser-induced; time-resolved-photog. and transient absorption spectroscopy of excited dielecs. by IR ultrashort laser radiation)
IT Laser radiation
(pulsed; time-resolved-photog. and transient absorption spectroscopy of excited dielecs. by IR ultrashort laser radiation)
IT Defects in solids
(radiation-induced; time-resolved-photog. and transient absorption spectroscopy of excited dielecs. by IR ultrashort laser radiation)
IT Crack (fracture)
Electric insulators
Free electrons
IR laser radiation
Photography
Stress, mechanical
(time-resolved-photog. and transient absorption spectroscopy of excited dielecs. by IR ultrashort laser radiation)
IT 7631-86-9, Silica, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(quartz; time-resolved-photog. and transient absorption spectroscopy of excited dielecs. by IR ultrashort laser radiation)
IT 1344-28-1, Alumina, processes 60676-86-0, Fused silica
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(time-resolved-photog. and transient absorption spectroscopy of excited dielecs. by IR ultrashort laser radiation)
RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(10) Martin, P; Phys Rev B 1997, V55, P5799 CAPLUS
(11) Petite, G; Appl Surf Sci 1997, V109/110, P36 CAPLUS
(12) Quere, F; Proceedings of SPIE 1998, V3578, P10
(13) Saeta, P; Phys Rev Lett 1993, V70, P3588 CAPLUS

L3 ANSWER 6 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:574424 CAPLUS
DN 142:363191
ED Entered STN: 19 Jul 2004
TI Ultrafast time-resolved photography of femtosecond laser induced modifications in BK7 glass and fused silica
AU Horn, A.; Kreutz, E. W.; Poprawe, R.
CS Lehrstuhl fuer Lasertechnik, RWTH Aachen, Aachen, 52074, Germany
SO Applied Physics A: Materials Science & Processing (2004), 79(4-6), 923-925
CODEN: APAMFC; ISSN: 0947-8396

PB Springer-Verlag
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
AB The dynamics of absorption after excitation of fused silica and BK7 glass with femtosecond laser radiation are visualized by transient absorption spectroscopy. Focusing laser radiation with pulse durations in the picosecond time regime in BK7 glass generates free electrons with relaxation by emission of radiation or by formation of defects. The temporal and spatial emission characteristics are observed by high-speed photog. in the streak mode. The beam waist moves within the pulse duration towards the incoming laser radiation by self-focusing and with the laser radiation absorbed by multiphoton processes. The dynamics of the long lasting stress formation is visualized by time-resolved Nomarski-Photog. The modification of the glass is investigated during and after irradiation with ultra-short pulsed laser radiation (100 fs < tp < 3 ps) at the wavelength λ = 810 nm. The formation of a sound wave in fused silica and BK7 glass is observed and the mech. stress, depending on the excitation pulse duration, is measured.
ST femtosecond laser radiation induced modification BK7 glass fused silica
IT Borosilicate glasses
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(crown; dynamics of absorption after excitation of fused silica and BK7 glass with femtosecond laser radiation visualized by transient absorption spectroscopy)
IT Electron-hole pairs
Electronic excitation
Luminescence
Photoelectrons
Photoinduced optical absorption
Self-trapped exciton
(dynamics of absorption after excitation of fused silica and BK7 glass with femtosecond laser radiation visualized by transient absorption spectroscopy)
IT Multiphoton absorption
(four-photon; dynamics of absorption after excitation of fused silica and BK7 glass with femtosecond laser radiation visualized by transient absorption spectroscopy)
IT Photography
(high-speed; dynamics of absorption after excitation of fused silica and BK7 glass with femtosecond laser radiation visualized by transient absorption spectroscopy)
IT Photoionization
(multiphoton; dynamics of absorption after excitation of fused silica and BK7 glass with femtosecond laser radiation visualized by transient absorption spectroscopy)
IT Sound and Ultrasound
Stress, mechanical
(photoinduced; dynamics of absorption after excitation of fused silica and BK7 glass with femtosecond laser radiation visualized by transient absorption spectroscopy)
IT Laser radiation
(pulsed; dynamics of absorption after excitation of fused silica and BK7 glass with femtosecond laser radiation visualized by transient absorption spectroscopy)
IT Defects in solids
(radiation-induced; dynamics of absorption after excitation of fused silica and BK7 glass with femtosecond laser radiation visualized by transient absorption spectroscopy)
IT Optical absorption
(transient; dynamics of absorption after excitation of fused silica and BK7 glass with femtosecond laser radiation visualized by transient

absorption spectroscopy)
IT 60676-86-0, Fused silica
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(dynamics of absorption after excitation of fused silica and BK7 glass with femtosecond laser radiation visualized by transient absorption spectroscopy)
RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
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(11) Quere, F; Proc SPIE 1998, V3578, P10
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L3 ANSWER 7 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:526740 CAPLUS
DN 139:237569
ED Entered STN: 10 Jul 2003
TI New processing techniques for the creation of micro-opto-mechanical machines and photonic devices embedded in glass
AU Abraham, Meg; Fuqua, Peter; Taylor, David P.; Hansen, William W.; Helvajian, Henry; Presser, Nathan; Livingston, Frank; La Lumondiere, Stephen
CS The Aerospace Corporation, El Segundo, CA, 90245, USA
SO Materials Research Society Symposium Proceedings (2003), Volume Date 2002, 739(Three-Dimensional Nanoengineered Assemblies), 231-236
CODEN: MRSPDH; ISSN: 0272-9172
PB Materials Research Society
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB The use of lasers to create intricate three-dimensional and buried structures in photo-structural glass has been well demonstrated at The Aerospace Corporation over the past four years. In these instances the glass used (Foturan, made by the Schott Group) forms a silver nucleation sites on exposure to intense UV laser light via a two-photon process. Subsequent annealing causes a localized crystal growth to form a meta-silicate phase which can be etched in dilute hydrofluoric acid at rates of 20 to 50 times that of the unprocessed glass. We are now in the process of experimenting with another formulation of photosensitive glass, also pioneered by Corning Glass Works, that behaves differently during the bake process. In the second case, a photoexposure and bake process creates a silver-halide crystal and forms an adjacent void in the glass. A second photoexposure and bake allows for the migration of more silver into the void creating patterned formations of silver nano-wires. Recent expts. with this type of glass have shown that the manipulation of the size and d. of the embedded nano-wires as well as the overall pattern of the clusters can be controlled using direct-write exposure to laser processing.
ST new processing technique micro optomech machine photonic device patterning; embedded glass photonic device fabrication laser
IT Aluminosilicate glasses
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(lithium aluminosilicate; new processing techniques for creation of

micro-opto-mech. machines and photonic devices embedded in glass)
IT Laser radiation
Lithography
Nanowires
Photonics
(new processing techniques for creation of micro-opto-mech. machines and photonic devices embedded in glass)
IT 7440-22-4, Silver, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(new processing techniques for creation of micro-opto-mech. machines and photonic devices embedded in glass)
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L3 ANSWER 8 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:287777 CAPLUS
DN 139:107385
ED Entered STN: 15 Apr 2003
TI Hybrid photon detectors
AU D'Ambrosio, C.; Leutz, H.
CS EP Division, CERN, Geneva, 23 CH-1211, Switz.
SO Nuclear Instruments & Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors, and Associated Equipment (2003), 501(2-3), 463-498
CODEN: NIMAER; ISSN: 0168-9002
PB Elsevier Science B.V.
DT Journal; General Review
LA English
CC 71-0 (Nuclear Technology)
AB A review regarding hybrid photon detectors. Hybrid photon detectors detect light via vacuum photocathodes and accelerate the emitted photoelectrons by an elec. field towards inversely polarized Si anodes, where they are absorbed, thus producing electron-hole pairs. These, in turn, are collected and generate electronic signals on their ohmic contacts. This review 1st describes the characteristic properties of the main components of hybrid photon detectors: light entrance windows, photocathodes, and Si anodes. Then, essential relations describing the trajectories of photoelectrons in elec. and magnetic fields and their backscattering from the Si anodes are derived. Depending on their anode configurations, 3 families of hybrid photon detectors are presented: hybrid photomultiplier tubes with single anodes for photon counting with high sensitivity and for gamma spectroscopy; multi-anode photon detector tubes with anodes subdivided into square or hexagonal pads for position-sensitive photon detection; imaging Si pixel array tubes with finely segmented anodes for photon-sensitive imaging devices. Some of the hybrid photon detectors' applications and achievements in radiation detection are discussed and compared with competing devices such as photomultipliers, image intensifiers, photodiodes, Si drift chambers, charge coupled devices, visible light photon counters, and photog. emulsions.
ST review hybrid photon detector
IT Electron-hole pairs
Photocathodes
Photoelectrons
(in relation to hybrid photon detectors)
IT Radiation detectors
(photon; hybrid photon detectors)
RE.CNT 87 THERE ARE 87 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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L3 ANSWER 9 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:873035 CAPLUS
DN 138:160187
ED Entered STN: 19 Nov 2002
TI Hybrid photon detectors
AU D'Ambrosio, C.; Leutz, H.
CS CERN, Geneva, Switz.
SO CERN Document Server: Preprints (2002) 1-71, ep/ep-2002-072, 4 Oct 2002
CODEN: CDSPCC
URL: http://documents.cern.ch/archive/electronic/cern/preprints/ep/ep-2002-072.pdf
PB European Organization for Nuclear Research
DT Preprint; General Review
LA English
CC 73-0 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 71
AB A review. Hybrid photon detectors detect light via vacuum photocathodes and accelerate the emitted photoelectrons by an elec. field towards inversely polarized Si anodes, where they are absorbed, thus producing electron-hole pairs. These, in turn, are collected and generate electronic signals on their ohmic contacts. This review 1st describes the characteristic properties of the main components of hybrid photon detectors: light entrance windows, photocathodes, and Si anodes. Then, essential relations describing the trajectories of photoelectrons in elec. and magnetic fields and their backscattering from the Si anodes are derived. Depending on their anode configurations, 3 families of hybrid photon detectors are presented: hybrid photomultiplier tubes with single anodes for photon counting with high sensitivity and for gamma spectroscopy; multi-anode photon detector tubes with anodes subdivided into square or hexagonal pads for position-sensitive photon detection; imaging Si pixel array tubes with finely segmented anodes for photon-sensitive imaging devices. Some of the hybrid photon detectors' applications and achievements in radiation detection are discussed and compared with competing devices such as photomultipliers, image intensifiers, photodiodes, Si drift chambers, charge coupled devices, visible light photon counters, and photog. emulsions.
ST review hybrid photon detector; silicon hybrid photon detector review;

gamma ray detector hybrid review
IT Optical detectors
Radiation detectors
(hybrid photon detectors)
IT Gamma ray detectors
Optical imaging devices
(hybrid photon detectors as)
IT Anodes
Photocathodes
Photomultipliers
(hybrid photon detectors with)
IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(hybrid photon detectors with)
RE.CNT 85 THERE ARE 85 CITED REFERENCES AVAILABLE FOR THIS RECORD
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(83) Uchida, H; IEEE Trans Nucl Sci 1986, V33, P464
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L3 ANSWER 10 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:52791 CAPLUS
DN 137:48071
ED Entered STN: 20 Jan 2002
TI Photorefractive polymers sensitized by two-photon absorption
AU Blanche, P. A.; Kippelen, B.; Schulzgen, A.; Fuentes-Hernandez, C.; Ramos-Ortiz, G.; Wang, J. F.; Hendrickx, E.; Peyghambarian, N.; Marder, S. R.
CS Optical Sciences Center, The University of Arizona, Tucson, AZ, 85721, USA
SO Optics Letters (2002), 27(1), 19-21
CODEN: OPLEDP; ISSN: 0146-9592
PB Optical Society of America
DT Journal
LA English
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 73, 74, 76
AB We demonstrate the recording of holograms and their nondestructive readout in a photorefractive polymer, using two-photon absorption. Sensitivity is provided by the excitation of the electroactive chromophore with femtosecond pulses, followed by charge injection into the photoconducting poly(N-vinylcarbazole) matrix. The holograms can be fully erased with a pulsed laser source but are insensitive to CW laser beams with the same wavelength. Studies of the field and intensity dependence of the diffraction efficiency indicate that the holograms are formed through the photorefractive effect.

ST photorefractive polymer sensitized two photon absorption; polyvinylcarbazole photorefractive sensitized two photon absorption

IT Photographic sensitizers
(fluorinated cyano-tolane; recording of holograms and their nondestructive readout in photorefractive polymers sensitized by two-photon absorption)

IT Diffraction gratings
Holographic recording materials
Holography
Photorefractive effect
Photorefractive materials
Two-photon absorption
(recording of holograms and their nondestructive readout in photorefractive polymers sensitized by two-photon absorption)

IT 238426-61-4
RL: NUU (Other use, unclassified); USES (Uses)
(photosensitizer; recording of holograms and their nondestructive readout in photorefractive polymers sensitized by two-photon absorption)

IT 85-68-7, Benzyl butyl phthalate 86-28-2, N-Ethylcarbazole
RL: NUU (Other use, unclassified); USES (Uses)
(poly(N-vinylcarbazole) matrix containing; recording of holograms and their nondestructive readout in photorefractive polymers sensitized by two-photon absorption)

IT 25067-59-8, Poly(N-vinylcarbazole)
RL: PRP (Properties)
(recording of holograms and their nondestructive readout in photorefractive polymers sensitized by two-photon absorption)

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L3 ANSWER 11 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN

AN 2001:189111 CAPLUS
DN 135:52966
ED Entered STN: 20 Mar 2001

TI Up-conversion luminescence enhancement of Tm3+ Yb3+-codoped glass induced by equivalent spontaneous emission effect

AU Chen, Xiaobo; Nie, Yu Xin
CS Analytical and Testing Center, Beijing Normal University, Beijing, 100875, Peop. Rep. China

SO Proceedings of SPIE-The International Society for Optical Engineering (2000), 4102(Inorganic Optical Materials II), 307-315
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB This paper found that in the case of indirect up-conversion sensitization, the proportion of the up-conversion luminous intensity of Tm0.03Yb0.18La0.79P5O14 to that of Tm(0.1)Yb(3):ZBLAN is strengthened by 103 times from 7.30 + 10-4 under direct sensitization to 7.50 + 10-2 (or 1/13.3) under indirect sensitization. This paper analyzed the physics understanding of the upconversion phenomenon

penetratingly. Spontaneous radiation A and multiphoton non-radiate relaxation Wn does act simultaneously.
ST luminescence thulium ytterbium codoped glass
IT Luminescence
Optical up-conversion
Photographic sensitization
Radiative transition
Relaxation
(up-conversion luminescence enhancement of Tm3+ Yb3+-codoped glass induced by equivalent spontaneous emission effect)
IT Glass, uses
RL: DEV (Device component use); USES (Uses)
(up-conversion luminescence enhancement of Tm3+ Yb3+-codoped glass induced by equivalent spontaneous emission effect)
IT 18923-27-8, Ytterbium(3+), uses 22541-23-7, Thulium(3+), uses
RL: MOA (Modifier or additive use); USES (Uses)
(up-conversion luminescence enhancement of Tm3+ Yb3+-codoped glass induced by equivalent spontaneous emission effect)
RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L3 ANSWER 12 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 2001:131943 CAPLUS
DN 134:302612
ED Entered STN: 22 Feb 2001
TI Linear and second order nonlinear gratings induced by two photon absorption in thermally poled glasses
AU Montant, S.; Freysz, E.
CS Centre de Physique Moleculaire Optique et Hertzienne Universite Bordeaux I 354, cours de la liberation, Talence, 33405, Fr.
SO OSA Trends in Optics and Photonics Series (2000), 33(Bragg Gratings, Photosensitivity, and Poling in Glass Waveguides), 371-373
CODEN: OTOPFZ; ISSN: 1094-5695
PB Optical Society of America
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57, 74
AB Using amplified femtosecond pulses in thermally poled glasses, the authors proposed a new method which results in the formation of both thick linear and nonlinear quasi-phase matching (QPM) thin gratings. Thermally poled glasses can be used as erasable optical memories since one can consider that the spatially limited optical eraser of the induced second-order nonlinearity allows to store a bit of information that can be retrieved looking for the absence of SHG at the considered point. It was shown that poled glasses have less binary level of erasure and have photog. film like behavior.
ST linear nonlinear laser grating photon absorption thermally poled glass

IT Phosphate glasses
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(borophosphate, thermally poled niobium-doped; linear and second order nonlinear gratings induced by two photon absorption in thermally poled glasses)
IT Second-harmonic generation
Second-order nonlinear optical susceptibility
(linear and second order nonlinear gratings induced by two photon absorption in thermally poled glasses)
IT Optical properties
(linear; linear and second order nonlinear gratings induced by two photon absorption in thermally poled glasses)
IT Two-photon absorption
(nonlinear; linear and second order nonlinear gratings induced by two photon absorption in thermally poled glasses)
IT Memory effect
(optical, erasable; linear and second order nonlinear gratings induced by two photon absorption in thermally poled glasses)
IT Nonlinear optical properties
(quasi-phase matching; linear and second order nonlinear gratings induced by two photon absorption in thermally poled glasses)
IT Laser induced grating
(second order nonlinear; linear and second order nonlinear gratings induced by two photon absorption in thermally poled glasses)
IT Dielectric polarization
(thermal poling; linear and second order nonlinear gratings induced by two photon absorption in thermally poled glasses)
IT Nonlinear optical absorption
(two-photon; linear and second order nonlinear gratings induced by two photon absorption in thermally poled glasses)
IT 1313-96-8, Niobium oxide
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(borophosphate glass containing; linear and second order nonlinear gratings induced by two photon absorption in thermally poled glasses)
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L3 ANSWER 13 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 2001:22190 CAPLUS
DN 134:199797
ED Entered STN: 10 Jan 2001
TI A quantum electrodynamical theory of three-center energy transfer for upconversion and downconversion in rare earth doped materials
AU Andrews, David L.; Jenkins, Robert D.
CS School of Chemical Sciences, University of East Anglia, Norwich, NR4 7TJ, UK
SO Journal of Chemical Physics (2001), 114(3), 1089-1100
CODEN: JCPSA6; ISSN: 0021-9606
PB American Institute of Physics
DT Journal
LA English
CC 73-1 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB Three-center energy transfer affords the basic mechanism for a variety of multiphoton processes identified within materials doped with rare earths. Addressing the theory using quantum electrodynamics, general results are obtained for systems in which the fundamental photophysics engages 3 ions. Distinct cooperative and accretive mechanistic pathways are identified and the theory is formulated to elicit their role and features in energy transfer phenomena of pooling upconversion, sensitization, and downconversion or quantum cutting. Although the 2 mechanisms play significant roles in pooling and cutting, only the accretive mechanism is responsible for sensitization processes. Both mechanisms invoke Raman selection rules, which govern transitions of the mediator ions in the accretive mechanisms and transitions of the acceptor ions in the cooperative mechanisms. The local, microscopic level results are used to gauge the lattice response, encompassing concentration and structural effects. Attention is drawn to a general implication of implementing a multipolar description for the optical properties of doped solid-state ionic materials.

ST quantum electrodynamic upconversion rare earth doped material; downconversion quantum electrodynamic rare earth doped material

IT Electron acceptors
Energy transfer
Optical properties
Optical up-conversion
Photographic sensitization
Photophysics
QED (quantum electrodynamics)
Raman spectra
(quantum electrodynamical theory of three-center energy transfer for upconversion and downconversion in rare earth doped materials)

IT Rare earth metals, uses
RL: MOA (Modifier or additive use); USES (Uses)
(quantum electrodynamical theory of three-center energy transfer for upconversion and downconversion in rare earth doped materials)

RE.CNT 74 THERE ARE 74 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L3 ANSWER 14 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 2000:784923 CAPLUS
DN 134:123468
ED Entered STN: 09 Nov 2000
TI Two-photon photographic production of three-dimensional metallic structures within a dielectric matrix
AU Wu, Pu-Wei; Cheng, Wei; Martini, Ignacio B.; Dunn, Bruce; Schwartz, Benjamin J.; Yablonovitch, Eli
CS Department of Materials Science and Engineering, University of California, Los Angeles, CA, 90095-1595, USA
SO Advanced Materials (Weinheim, Germany) (2000), 12(19), 1438-1441
CODEN: ADVMEW; ISSN: 0935-9648
PB Wiley-VCH Verlag GmbH
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB The authors demonstrated a photog.-like approach for producing

three-dimensional silver structures. Fabrication was based on laser-induced formation of a latent image. Multiphoton processes were involved in image formation, allowing features to be written directly into the interior of the matrix in a single fabrication step. Development of the image was accomplished from the controlled reduction of a AgClO4 solution Although the final microstructure was composed of discrete, 40-50 nm diameter silver particles, the authors are presently exploring new development methods that enable the particles to become interconnected over longer distances, leading to the lithog. patterning of metal wires in three dimensions in the interior of the gel. The authors expect that the ability to lithog. produce three-dimensional metallic structures should be compatible with recently developed three-dimensional polymer fabrication processes, thus greatly extending the opportunities for lithog. microfabrication.

ST photoimaging silica gel silver nitrate 3D metallic structure fabrication; photolithog metal structure two photon silica gel silver nitrate; photolysis silica gel silver nitrate 3D metallic structure fabrication

IT Photoimaging
Photolithography
Photolysis
Sol-gel processing
Stereolithography
(two-photon photog.-like production of three-dimensional microscopic silver metallic structures within silica gel matrix)

IT Silica gel, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(two-photon photog.-like production of three-dimensional microscopic silver metallic structures within silica gel matrix)

IT 7783-93-9, Silver perchlorate
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(developer; two-photon photog.-like production of three-dimensional microscopic silver metallic structures within silica gel matrix)

IT 7440-22-4, Silver, processes
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)
(two-photon photog.-like production of three-dimensional microscopic silver metallic structures within silica gel matrix)

IT 681-84-5, Tetramethoxysilane
RL: NUU (Other use, unclassified); USES (Uses)
(two-photon photog.-like production of three-dimensional microscopic silver metallic structures within silica gel matrix)

IT 7761-88-8, Silver nitrate, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(two-photon photog.-like production of three-dimensional microscopic silver metallic structures within silica gel matrix)

RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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L3 ANSWER 15 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 2000:753226 CAPLUS
DN 134:93257
ED Entered STN: 26 Oct 2000
TI One-photon processes of latent image formation in silver halides
AU Leubner, I. H.
CS Crystallization Consulting, Penfield, NY, 14526, USA
SO Imaging Science Journal (1999), 47(4), 213-219
CODEN: ISCJFK; ISSN: 1368-2199
PB Royal Photographic Society of Great Britain
DT Journal
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB A new one-photon process for latent image formation in silver halides is proposed. The model is an extension of the theor. concepts of Gurney-Mott, Hamilton and Lowe. Hamilton proposed a four-photon mechanism for the photochem. formation of Ag4 latent image centers. Subsequently, Lowe developed a two-photon mechanism, which includes hole trapping by Ag2 reduction centers. Mitchell proposed a two-photon mechanism based on the presence of electron trapping Ag2 centers that act as sublatent image centers. One-photon latent image formation was proposed which relied on gold-containing electron-trapping centers; however, these mechanisms were considered to be fogging mechanisms. From the concepts of the previous mechanisms, a one-photon latent image mechanism is proposed that does not result in fog. This one-photon process is based on the presence of both electron and hole-trapping Ag2 centers on the same crystal before exposure. Both photoelectron and photohole, which are formed by light absorption, participate in this mechanism. The required electron-hole energy separation is estimated to be about 1.4 eV and is thus well above the thermal energy at room temperature (about 0.03 eV). Exptl. evidence for one-photon processes in silver halide systems supports the proposed one-photon mechanism for Ag4 latent image formation.
ST photog latent image formation silver halide
IT Hole traps
Photoelectrons
Photographic sensitization
Photography
Trapping
(one-photon processes of latent image formation in silver halides)
IT Silver halides
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(one-photon processes of latent image formation in silver halides)
IT 7440-22-4, Silver, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(one-photon processes of latent image formation in silver halides)
RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L3 ANSWER 16 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 2000:261474 CAPLUS
DN 132:354664
ED Entered STN: 23 Apr 2000
TI Nonlinear excitation of AgBr nanocrystals in the field of short light pulses
AU Perlin, E. Yu.; Stasel'ko, D. I.
CS All-Russian Research Center, S.I. Vavilov State Optical Institute, St. Petersburg, 199034, Russia
SO Optics and Spectroscopy (Translation of Optika i Spektroskopiya) (2000), 88(1), 50-54
CODEN: OPSUA3; ISSN: 0030-400X
PB MAIK Nauka/Interperiodica
DT Journal
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Processes of the electron-hole pair generation and excited-state relaxation at earlier stages of the latent image formation in the AgBr nanocrystals are studied theor. The exptl. dependence of the photog. darkening D in the field of the intense laser light on the light pulse energy I is analyzed in the range of pulse durations τi from 10-13 to 10-8 s. The values of I needed to obtain a fixed darkening D at τi .apprx. 10-10 s exceeded those at τi .apprx. 10-8 s by three orders of magnitude. However, as τi further decreased to hundreds of fs, these values decreased by two orders of magnitude. It is shown that exptl. nonmonotonic dependences can be explained by saturation of the one-photon interband generation of electron-hole pairs accompanied by the development of the two-photon generation. For shortest pulses and, correspondingly, greatest light intensities, the pair generation rate varies more strongly than upon usual two-photon absorption, which is caused by the resonance optical Stark effect.
ST nonlinear excitation silver bromide nanocrystal; photog emulsion nonlinear sensitivity; electron hole pair photogeneration excited state relaxation silver bromide
IT Electron-hole pairs
Nonlinear optical properties
Photography
(electron-hole pair generation and excited-state relaxation at earlier stages of photog. latent image formation in AgBr nanocrystals)
IT 7785-23-1, Silver bromide
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(electron-hole pair generation and excited-state relaxation at earlier stages of photog. latent image formation in AgBr nanocrystals)
RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
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L3 ANSWER 17 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 2000:83993 CAPLUS
DN 132:194788
ED Entered STN: 04 Feb 2000
TI 3-Dimensional submicron polymerization of acrylamide by multiphoton excitation of xanthene dyes
AU Campagnola, Paul J.; Delguidice, David M.; Epling, Gary A.; Hoffacker, Kurt D.; Howell, Amy R.; Pitts, Jonathan D.; Goodman, Steven L.
CS Department of Physiology and Center for Biomedical Imaging Technology, University of Connecticut Health Center, Farmington, CT, 06030, USA
SO Macromolecules (2000), 33(5), 1511-1513
CODEN: MAMOBX; ISSN: 0024-9297
PB American Chemical Society
DT Journal
LA English
CC 35-7 (Chemistry of Synthetic High Polymers)
AB The two-photon excited (TPE) polymerization of acrylamide using several xanthene sensitizers (rose bengal, eosin, erythrosin, fluorescein, rhodamine B, and coumarin 519) was investigated. To compare photosensitizer efficiency at a given wavelength, the TPE cross section values were determined using a epi-illumination fluorescence setup. Aside the TPE cross section, fluorescence quantum yields were also considered for comparison. The 3-dimensional nature of the TPE polymerization was demonstrated by determining min. feature sizes (.apprx.500 nm).
ST photopolymn acrylamide size structure xanthene sensitizer; polyacrylamide structure size submicron photopolymn
IT Fluorescence
Photographic sensitizers
(submicron polymerization of acrylamide by multiphoton excitation of xanthene sensitizers)
IT 81-88-9, Rhodamine B 2321-07-5, Fluorescein 11121-48-5, Rose bengal 16423-68-0, Erythrosin 17372-87-1, Eosin 55804-65-4, Coumarin 519
RL: NUU (Other use, unclassified); USES (Uses)
(submicron polymerization of acrylamide by multiphoton excitation of xanthene sensitizers)
IT 9003-05-8P, Polyacrylamide
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(submicron polymerization of acrylamide by multiphoton excitation of xanthene sensitizers)
RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L3 ANSWER 18 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1999:212506 CAPLUS
DN 131:11453
ED Entered STN: 05 Apr 1999
TI Two-photon exposure of photographic film
AU Wu, Pu-Wei; Dunn, Bruce; Yablonovitch, Eli; Doan, Vinh; Schwartz, Benjamin J.
CS Department of Materials Science and Engineering, University of California, Los Angeles, Los Angeles, CA, 90095-1595, USA
SO Journal of the Optical Society of America B: Optical Physics (1999), 16(4), 605-608
CODEN: JOBPDE; ISSN: 0740-3224
PB Optical Society of America
DT Journal
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Photog. film has commonly been exposed by a single-photon absorption mechanism. The authors determine the conditions for film exposure by direct 2-photon absorption. Using sub-picosecond laser pulses, 2-photon exposure for com. film has a threshold fluence and an intensity of 0.0008 J/cm2 and 0.0066 TW/cm2, resp., well below the optical damage threshold. Multiphoton photog. has the potential for higher spatial resolution and affords an opportunity for 3-dimensional image storage.
ST image storage two photon exposure photog film
IT Photographic films
Photographic paper
(two-photon exposure of photog. film using subpicosecond laser for three-dimensional image storage)
RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L3 ANSWER 19 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1998:746969 CAPLUS

ED Entered STN: 25 Nov 1998
TI Delayed single-photon self-interference
AU Mohan, R. Krishna; Luo, Baozhu; Kroll, Stefan; Mair, Alois
CS Department of Physics, Lund Institute of Technology (LTH), Box 118, Lund, S-221 00, Swed.
SO Physical Review A: Atomic, Molecular, and Optical Physics (1998), 58(6), 4348-4358
CODEN: PLRAAN; ISSN: 1050-2947
PB American Physical Society
DT Journal
LA English
AB It has been suggested that a single photon can interfere with itself even if the difference between the two paths in the interferometer is larger than the "length" of the photon [Kessel' and Moiseev, JETP Lett. 58, 81 (1993)]. The interference is regained by detecting the photons using a photon-echo process, where the absorbing atoms will, effectively, act as narrow-band filters. Such an experiment has several unique features. For example, single photons are used to carry out what is generally regarded as a multiphoton process; the absorption of a single photon can be regarded as separated into two different moments in time; the fact that the single-photon interference is regained using atoms acting as narrow-band filters as the detector means that the control of the detection process is quite different from cases where electronic (or possibly photog .) detection is used to register the interference etc. In general, interference and absorption are combined and intertwined in the experiment, which is discussed in this paper, in a way that has not been done before. In the present paper the possibility to carry out such an experiment in practice is investigated in some detail. The signal strength is explicitly calculated and the results are compared with our exptl. data for the case of many interfering photons. We imply that this result can readily be extrapolated to the single-photon situation. We analyze the material parameters that are important for carrying out the experiment and give specific examples of some suitable materials.
RE.CNT 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L3 ANSWER 20 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1998:746931 CAPLUS
DN 130:87632
ED Entered STN: 25 Nov 1998
TI On the B-X transitions of expansion cooled silver halides

AU Stueber, Guido J.; Foltin, Martin; Bernstein, Elliot R.
CS Department of Chemistry, Colorado State University, Fort Collins, CO, 80523-1872, USA
SO Journal of Chemical Physics (1998), 109(22), 9831-9842
CODEN: JCPSA6; ISSN: 0021-9606
PB American Institute of Physics
DT Journal
LA English
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
AB Fluorescence excitation and mass-resolved excitation spectroscopy of jet-cooled silver halide (AgX) bare mols. are explored for the B-X systems of AgCl, AgBr, and AgI. These spectra are compared to those from static gas measurements. The continuous-wave expansion mol. beam of Ar-He with AgX species is generated at a temperature of 1100°. For AgI two types of progressions appear in 31,000-33,000 cm-1 range. The first set of transitions is attributed to the B state and is quite similar to the other AgX mols. B-X transitions. The second set was previously observed for high-temperature AgI vapor as a partly resolved series of features on a broad absorption. The nature of this state and whether it arises from a level crossing between the B surface and an unobserved state is not clear. We analyze two different possible explanations for the newly resolved B' progression: The B and B' progressions involve two different excited electronic states; and both progressions belong to one excited electronic state with a complicated single adiabatic potential surface. Computation of vibrational harmonic and anharmonic consts. suggests that the potential shape of the B/B' state is substantially different from that of a common anharmonic oscillator. The nature of the B/B' surface must be resolved through detailed and accurate ab initio calcns. Ag ions produced by 1+2 photoionization of AgX at longer wavelengths are not fragmentation products of AgX ions, but rather arise from the dissociation of a neutral AgX in a highly excited state. This intermediate state at .apprx.62,000 cm-1 is accessed from the B state by absorption of a photon of approx. the same energy as required for the B-X AgX transition.
ST fluorescence excitation spectra expansion cooled silver halide; chloride bromide iodide silver mass resolved fluorescence excitation
IT Excited electronic state
Excited vibrational state
Isotope effect
Laser induced fluorescence
Vibronic transition
(fluorescence excitation spectra of expansion cooled silver halides)
IT Silver halides
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(fluorescence excitation spectra of expansion cooled silver halides)
IT Molecular beams
(fluorescence excitation spectra of supersonic jet expansion cooled silver halides)
IT Mass spectra
(mass-resolved fluorescence excitation spectra of expansion cooled silver halides)
IT Fluorescence excitation
(mass-resolved; of expansion cooled silver halides)
IT Anharmonic molecular vibration
Molecular vibration
(of B state of silver halides)
IT Dissociative photoionization
Two-photon ionization
(of silver halides)

IT Morse potential
Potential energy surface
(of silver halides, related to fluorescence spectra)
IT 7783-90-6, Silver chloride (AgCl), properties 7783-96-2, Silver iodide (AgI) 7785-23-1, Silver bromide (AgBr) 17116-37-9, Silver chloride (107Ag35Cl) 17116-38-0, Silver chloride (107Ag37Cl) 32058-97-2, Silver chloride (109Ag35Cl) 32058-98-3, Silver bromide (107Ag79Br) 32058-99-4, Silver bromide (109Ag79Br) 32059-00-0, Silver iodide (107AgI) 32059-01-1, Silver iodide (109AgI) 80625-06-5, Silver chloride (Ag37Cl) 82022-01-3, Silver bromide (109Ag81Br) 106996-62-7, Silver bromide (107Ag81Br) 135804-50-1, Silver chloride (Ag35Cl) 139995-68-9, Silver chloride (109Ag37Cl)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(fluorescence excitation spectra of expansion cooled silver halides)
RE.CNT 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L3 ANSWER 21 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1998:678639 CAPLUS
DN 130:8798
ED Entered STN: 28 Oct 1998
TI Light-sensitive organic media for a high-capacity optical memory devices

AU Barachevskii, V. A.
CS Tsentr Fotokhim., RAN, Moscow, Russia

SO Zhurnal Nauchnoi i Prikladnoi Fotografii (1998), 43(5), 79-90

CODEN: ZNPFEK; ISSN: 0869-6144
PB Nauka
DT Journal; General Review
LA Russian
CC 74-0 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Photosensitive non-silver halide materials for irreversible and reversible laser recording optical memory are reviewed. Among these materials particular attention was devoted to the photochem. recording materials for holog. (photopolymers) and to the two-photon-, frequency-selective-, photoanisotropic- and photoluminescent materials for memory devices. 39 Refs.
ST review optical memory photosensitive recording material
IT Optical anisotropy
(photoinduced; photosensitive organic media for a high-capacity optical memory devices)
IT Holographic memory devices
Luminescent substances
Optical memory devices
Optical recording materials
Photochemistry
(photosensitive organic media for a high-capacity optical memory devices)
IT Polymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(photosensitive; photosensitive organic media for a high-capacity optical memory devices)

L3 ANSWER 22 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1998:413357 CAPLUS
DN 129:181922
ED Entered STN: 08 Jul 1998
TI Ultrafast relaxation phenomena and chemical behavior of metal clusters
AU Schreiber, Elmar; Rutz, Soeren; Wolf, Sebastian; Leisner, Thomas; Woste, Ludger
CS Institut fur Experimentalphysik, Freie Universitat Berlin, Berlin, 14195, Germany
SO Frontiers Science Series (1996), 16(Structures and Dynamics of Clusters), 199-208
CODEN: FCFUEO; ISSN: 0915-8502
PB Universal Academy Press, Inc.
DT Journal; General Review
LA English
CC 74-0 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB The authors reviewed their recent results on the ultrafast relaxation dynamics of gas phase clusters and the catalytic properties of size-selected clusters deposited on surfaces. By means of femtosecond pump and probe technique they investigated temporal evolution and photodissocn. of excited potassium clusters ($3 \leq n \leq 9$). For three different excitation energies E = 1.47 eV, 2.00 eV, and 2.94 eV they were able to measure the transient multiphoton ionization spectra. Fragmentation time consts. were estimated to be cluster size- and energy-dependent in the range of 200 fs up to 10 ps. The observation of ultrafast vibrational relaxation of neutral mass selected metal clusters in the electronic ground state was achieved employing a new exptl. scheme. The neutrals were produced by photodetachment of the corresponding anions, and the relaxation dynamics from the anionic to the neutral configuration was observed through the ionization of the neutrals after a well controlled time delay. By the soft deposition of size selected Ag and Ag/Au clusters onto photog. AgBr grains the authors modelled photog. latent image. Data on their catalytic properties as a function of the cluster composition and the redox potential of the photog. developer are presented. 31 Refs.
ST review metal cluster ultrafast relaxation catalysis
IT Photographic emulsions

Photography
(latent image formation; ultrafast relaxation dynamics and catalytic properties of size-selected Ag and Ag/Au clusters deposited on photog. AgBr grains)

IT Clusters
RL: PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(metal; ultrafast relaxation dynamics of gas phase clusters and catalytic properties of size-selected clusters deposited on surfaces)

IT Photoionization
(multiphoton; ultrafast relaxation dynamics of gas phase clusters and catalytic properties of size-selected clusters deposited on surfaces)

IT Catalysts
(photochem.; ultrafast relaxation dynamics of gas phase clusters and catalytic properties of size-selected clusters deposited on surfaces)

IT Photolysis catalysts
(ultrafast relaxation dynamics and catalytic properties of size-selected Ag and Ag/Au clusters deposited on photog. AgBr grains)

IT Electron photodetachment
Photoionization mass spectra
Photolysis
(ultrafast relaxation dynamics of gas phase clusters and catalytic properties of size-selected clusters deposited on surfaces)

IT Vibrational relaxation
(ultrafast relaxation vibrational relaxation of neutral mass selected metal clusters in electronic ground state)

IT 7440-09-7D, Potassium, clusters, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(temporal evolution and photodissocn. of excited potassium clusters)

IT 7440-22-4D, Silver, clusters, processes 7440-57-5D, Gold, clusters, processes 7785-23-1D, Silver bromide, clusters
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(ultrafast relaxation dynamics and catalytic properties of size-selected Ag and Ag/Au clusters deposited on photog. AgBr grains)

RE.CNT 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L3 ANSWER 23 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1998:237483 CAPLUS
DN 128:328682
ED Entered STN: 27 Apr 1998
TI Nonlinear sensitivity of silver halide holographic materials to high-intensity nonactinic radiation
AU Mikhailov, V. N.; Stasel'ko, D. I.
CS Vseross. Nauchnyi Tsentr, Gos. Opticheskii Inst. im. Vavilova, St.Petersburg, Russia
SO Zhurnal Nauchnoi i Prikladnoi Fotografii (1998), 43(2), 1-7
CODEN: ZNPFEK; ISSN: 0869-6144
PB Nauka
DT Journal
LA Russian
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Sensitivity was studied of photog. silver halide plates for holog. to the high intensity nonactinic laser radiation at changing exposure duration from 10-3 to 1.5+10-13 s and at quantum energy range from 0.65 to 1.82 eV. Sensitivity to long-wave nonactinic radiation was determined by two-photon processes. The character and nature of the plates sensitivity depended not only on the radiation λ and exposure duration but also on the presence of charge carrier acceptors in the emulsion layer.
ST nonlinear sensitivity photog holog laser radiation
IT Holographic recording materials
Laser radiation
Nonlinear optical properties
Photographic plates
(nonlinear sensitivity of silver halide holog. materials to high-intensity nonactinic radiation)
IT Photographic emulsions
(nonlinear sensitivity of silver halide holog. materials to high-intensity nonactinic radiation affected by processing with charge carrier acceptors)
IT 1910-42-5, Methylviologen 13943-58-3, Potassium ferrocyanide
RL: PRP (Properties)
(nonlinear sensitivity of silver halide holog. materials to high-intensity nonactinic radiation affected by processing with charge carrier acceptors)

L3 ANSWER 24 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1997:532839 CAPLUS
DN 127:270309
ED Entered STN: 21 Aug 1997
TI Ultrafast studies of imaging processes
AU Diol, Sabrina J.; Miller, R. J. Dwayne
CS Cent. Photoinduced Charge Transfer, Dep. Chem., Univ. Rochester, Rochester, NY, 14627, USA
SO Journal of Imaging Science and Technology (1997), 41(2), 99-111
CODEN: JIMTE6; ISSN: 1062-3701
PB IS&T--The Society for Imaging Science and Technology
DT Journal; General Review
LA English
CC 74-0 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

AB Interfacial electron transfer is the most fundamental process driving all imaging technologies. The advent of ultrafast lasers has led to the development of novel exptl. techniques to probe such dynamics. This article presents five time domain spectroscopies that allow direct measurement of different segments of the electron trajectory across a heterogeneous interface. Electrooptic sampling measures field-assisted transport of carriers to the surface. Time-resolved two-photon photoemission enables measurement of electron relaxation at surfaces. Time-correlated single-photon counting, transient grating, and transient absorption techniques are implemented to determine electron transfer rates at interfaces. With these real-time approaches, the primary photophys. and photochem. processes at semiconductor/liquid interfaces and dye-sensitized semiconductors can be studied directly. The new information forthcoming from such studies is that electron transfer processes can be extremely fast at surfaces, in a range approaching adiabatic coupling conditions between the delocalized bond states and discrete mol. donor or acceptor states. This observation leads to a new conceptual framework for understanding photoinduced interfacial charge transfer processes. 85 Refs.

ST review photoinduced interfacial charge transfer imaging; photog ultrafast photophys photochem review; photoimaging ultrafast photophys photochem review

IT Photoinduced electron transfer
(interfacial; in imaging technologies)

IT Photochemistry
Photoemission
Photography
Photoimaging
Photophysics
(ultrafast studies of imaging processes)

RE.CNT 86 THERE ARE 86 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L3 ANSWER 25 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1996:435483 CAPLUS
DN 125:208196
ED Entered STN: 24 Jul 1996
TI Study of electron-hole recombination in silver chloride by microwave photoconductivity
AU Golovanov, B. I.; Tikhonina, N. A.; Novikov, G. F.
CS Inst. Khim. Fiz., RAN, Chernogolovka, Russia

SO Zhurnal Nauchnoi i Prikladnoi Fotografii (1996), 41(3), 48-50
CODEN: ZNPFEK; ISSN: 0869-6144
PB Nauka
DT Journal
LA Russian
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Microwave photocond. was used to study decay kinetics of electrons photogenerated in AgCl powders at 295 K by short laser pulses. With increase of light intensity (I0 > 1014 cm-2-photon /pulse) the photoresponse amplitude dependence on I0 was nonlinear, and electrons decay was corresponded to the second order kinetics. The rate constant of free electron recombination with holes equaled (1-3)+10-12 cm3-s-1.
ST microwave photocond electron hole recombination photog; silver chloride photoelectron hole recombination
IT Photography
(latent image in; microwave photocond. study of kinetics of electron-hole recombination in silver chloride)
IT Photoconductivity and Photoconduction
Photographic emulsions
Recombination of electron with hole
(microwave photocond. study of kinetics of electron-hole recombination in silver chloride)
IT 7783-90-6, Silver chloride, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(microwave photocond. study of kinetics of electron-hole recombination in silver chloride)

L3 ANSWER 26 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1995:946448 CAPLUS
DN 124:71337
ED Entered STN: 24 Nov 1995
TI Mechanisms of spectral sensitization of silver halides : role of sensitizing dye complexation
AU Sahyun, M. R. V.; Sharma, D. K.; Serpone, N.
CS Dry Imaging Technol. Cent., St. Paul, MN, 55144, USA
SO Journal of Imaging Science and Technology (1995), 39(5), 377-85
CODEN: JIMTE6; ISSN: 1062-3701
PB IS&T--The Society for Imaging Science and Technology
DT Journal
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB We have observed concurrent processes of photoexcited dye deactivation and silver(0) cluster formation in real time under conditions of laser flash photolysis of a merocyanine dye adsorbed to an AgBr nanosol. To our knowledge this is the first time such a comprehensive view of the process of spectral sensitization has been obtained exptl. Spectral sensitization of AgBr is apparently biphotonic under our conditions; this result, along with observed kinetics of dye ground state re-population and of silver(0) cluster growth, is consistent with Mitchell's mechanism of spectral sensitization, but not with single-electron transfer or radical pair mechanisms. Control expts. revealed a modicum of photolytic reactivity for undyed nanosol with 2.35 eV photons and suggested operation of an Auger mechanism of photoelectron generation. In this case amplified stimulated emission was observed from photogenerated silver clusters, Agn0, (or a byproduct) at photon energies comparable to those that produce the Herschel effect in conventional photog. We speculatively estimate nuclearity of the silver clusters produced under conditions of our expts. as n = ca. 12.
ST photog spectral sensitization mechanism dye complexation; photolysis dye sensitizer adsorbate silver bromide
IT Adsorption
(Freundlich isotherm; photolysis of merocyanine spectral sensitizer dye

adsorbed on silver bromide nanosol.)
IT Adsorbed substances
Kinetics of photolysis
(laser photolysis study of mechanism of photog. spectral sensitization by merocyanine dye)
IT Ultraviolet and visible spectra
(of transients; laser photolysis study of mechanism of photog . spectral sensitization by merocyanine dye)
IT Photolysis
(flash, of merocyanine spectral sensitizer dye adsorbed on silver bromide nanosol.)
IT Photographic sensitizers
(spectral, laser photolysis study of mechanism of photog. spectral sensitization by merocyanine dye)
IT 7440-22-4D, Silver, clusters
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)
(laser photolysis study of mechanism of photog. spectral sensitization by merocyanine dye)
IT 25962-03-2
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(laser photolysis study of mechanism of photog. spectral sensitization by merocyanine dye)
IT 7785-23-1, Silver bromide
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(photolysis of merocyanine spectral sensitizer dye adsorbed on silver bromide nanosol.)

L3 ANSWER 27 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1995:602957 CAPLUS
DN 123:127352
ED Entered STN: 09 Jun 1995
TI On the role of two-photon processes in spectral sensitization of photographic layers
AU Meikljar, P. V.
CS Kazan Scientific and Technological Inst. of Photochemical Industry, 420035, Russia
SO Journal of Imaging Science and Technology (1995), 39(2), 113-19
CODEN: JIMTE6; ISSN: 1062-3701
PB IS&T--The Society for Imaging Science and Technology
DT Journal
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB At low temps. the photoexcitation of dyes adsorbed on silver halide (AgHal) microcrystals causes luminescence in the same spectral region as that of the intrinsic excitation of AgHal. This anti-Stokes luminescence is observed for dyes with the same values of reduction and oxidation potentials as for the free electrons and pos. holes, resp., simultaneously formed in AgHal upon photoexcitation of dyes at room temperature The intensity of the anti-Stokes luminescence and the formation rate of pos. holes at room temperature increase with increase of pAg of the emulsion. It is assumed that at all temps. the spectral sensitization is a two-photon process. The first stage of this process is the reduction of surface silver ions by photoexcited dye mols. At the second stage one of these photoexcited dye mols. transfers its energy to the previously formed silver atom with the transfer of an electron to the conduction band of AgHal. This hypothesis allows one to explain the dependence of the intensity of the anti-Stokes luminescence and photocond. on the intensity of the excitation radiation, the influence of the evacuation on the photog. sensitivity at low light intensity, and other regularities. Quantum yields of the spectral sensitization for dyes with different reduction properties were calculated from the kinetic equation

of the two-photon process.

ST two photon spectral sensitization photog emulsion

IT Adsorbed substances
Dyes
Energy level excitation
Luminescence
Photoconductivity and Photoconduction
Photographic emulsions
Photolysis
(two-photon processes in spectral sensitization of photog. layers)

IT Photographic sensitizers
(spectral, two-photon processes in spectral sensitization of photog. layers)

L3 ANSWER 28 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1995:489404 CAPLUS
DN 123:127289
ED Entered STN: 14 Apr 1995
TI Photochemical reactions of 1H-pyrazolo[1,5-b][1,2,4]triazole azomethine dyes
AU Furuya, Kazuhiko; Furutachi, Nobuo; Oda, Shohei; Maruyama, Kazuhiro
CS Ashigara Res. labs., Fuji Photo Film Co. Ltd., Minami-Ashigara, 250-01, Japan
SO Fujifilm Research & Development (1995), 40, 69-74
CODEN: FFRDEK; ISSN: 0915-1478
PB Fuji Shashin Fuirumu K.K.
DT Journal
LA English
CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB The photochem. reactions of 1H-pyrazolo[1,5-b][1,2,4]triazole azomethine dyes have been studied both in solution and in film. There are two different reaction pathways. Under visible (VIS) light illumination, the reactive species are the lowest excited state of the dimer of the pyrazolotriazole dyes. The reaction proceeds by a one-photon process. Under UV light illumination, the reactive species is the upper excited state of the monomeric pyrazolotriazole dye. The reaction may proceed by a step-by-step two-photon process. A series of additives were tested to improve the light-fastness of pyrazolotriazole dyes. Of the various stabilizers, spiroindane derivs. quench the fluorescence of the dimeric pyrazolotriazole dyes with a maximum value of 1.1 + 102 dm3-mol-1 for the product of $k_q\tau_0$. These compds. efficiently reduce the photochem. reactions of pyrazolotriazole dyes in film.

ST photolysis pyrazolotriazole photog azomethine dye; stabilizer effect photochem pyrazolotriazole photog dye

IT Photography, color
(effect of additives on photochem. reactions of pyrazolotriazole azomethine dyes in solns. and in films)

IT Fluorescence quenching
(effect of stabilizers on photochem. of pyrazolotriazole photog . azomethine dyes)

IT Photographic stabilizers
(photochem. of pyrazolotriazole photog. azomethine dyes affected by)

IT Photolysis
(photochem. reactions of pyrazolotriazole photog. azomethine dyes)

IT 166602-80-8
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(photochem. of pyrazolotriazole photog. azomethine dyes in solns. and in films and effect of stabilizers)

IT 166602-77-3 166602-78-4

RL: PEP (Physical, engineering or chemical process); RCT (Reactant); TEM (Technical or engineered material use); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(photochem. of pyrazolotriazole photog. azomethine dyes in solns. and in films and effect of stabilizers)

IT 166602-79-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(photochem. of pyrazolotriazole photog. azomethine dyes in solns. and in films and effect of stabilizers)

IT 6307-95-5 85238-64-8 155908-24-0 155908-25-1
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(photog. stabilizer; effect of stabilizers on photochem. reactions of pyrazolotriazole photog. azomethine dyes)

L3 ANSWER 29 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1994:422250 CAPLUS
DN 121:22250
ED Entered STN: 09 Jul 1994
TI Photochemical reactions of 1H-pyrazolo[1,5-b][1,2,4]triazole azomethine dyes
AU Furuya, Kazuhiko; Furutachi, Nobuo; Oda, Shohei; Maruyama, Kazuhiro
CS Ashigara Res. Lab., Fuji Photo Film Co. Ltd., Kanagawa, 250-01, Japan
SO Journal of the Chemical Society, Perkin Transactions 2: Physical Organic Chemistry (1972-1999) (1994), (3), 531-6
CODEN: JCPKBH; ISSN: 0300-9580
DT Journal
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB The photochem. reactions of 1H-pyrazolo[1,5-b][1,2,4]triazole azomethine dyes have been studied both in solution and in film. Under visible light illumination, the reaction is a one-photon process and involves self-association Under UV illumination, the reactive species is the upper excited state of the monomeric pyrazolotriazole dye. The reaction may proceed by a step-by-step two-photon process. A series of additives were tested to improve the light-fastness of pyrazolotriazole dyes. Of the various stabilizers, spiroindane derivs. quench the fluorescence of the dimeric pyrazolotriazole dyes with a maximum quenching efficiency kqτ0 of 1.1 + 102 dm2-mol-1. These compds. efficiently reduce the photochem. reactions of pyrazolotraizole dyes in film.
ST photochem fading pyrazolotriazole azomethine dye photog; photofading pyrazolotriazole azomethine dye photog
IT Photolysis
(of pyrazolotriazole azomethine dyes, effect of various stabilizers on)
IT Fluorescence
(of pyrazolotriazole azomethine photog. dyes)
IT Fluorescence quenching
(of pyrazolotriazole azomethine photog. dyes by various stabilizers)
IT Photography, color
(photostability of pyrazolotriazole azomethine dyes for)
IT 155908-23-9P
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, in in photolysis of pyrazolotriazole parent dye)
IT 155908-20-6 155908-21-7 155908-22-8
RL: USES (Uses)
(photoreaction of, in solution and in film, effect of stabilizing additives on)
IT 6307-95-5 85238-64-8 155908-24-0 155908-25-1
RL: USES (Uses)
(photostability and fluorescence of pyrazolotriazole dyes affected by)

L3 ANSWER 30 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN

AN 1994:90462 CAPLUS
DN 120:90462
ED Entered STN: 19 Feb 1994
TI Peculiarities of three-dimensional optical recording of binary-coded information
AU Shteinberg, I. Sh.; Shchepetkin, Yu. A.
CS Novosibirsk, Russia
SO Avtometriya (1993), (3), 89-95
CODEN: AVMEBI; ISSN: 0320-7102
DT Journal; General Review
LA Russian
CC 74-0 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB The properties of different recording materials for multilayer optical recording read-out are compared. The materials include photog. silver halide emulsions, photopolymers, chalcogenide glass, and Fe-doped LiNbO3. The recording systems using two-photon absorption are discussed. To increase sensitivity of the two-photon materials (for recording based on nonlinear absorption) the mechanism of thermal, chemical, and optical amplification should be used. 9 Refs.
ST optical vol recording storage material review
IT Holography
(materials for)
IT Polymers, properties
RL: PRP (Properties)
(photosensitive, for optical recording of binary-coded information)
IT Photographic emulsions
(three-dimensional optical recording of binary-coded information in)
IT Glass, nonoxide
RL: USES (Uses)
(chalcogenide, optical recording of binary-coded information in)
IT Recording materials
(optical, three-dimensional, for binary-coded information)
IT Recording
(optical, three-dimensional, of binary-coded information)
IT 12031-63-9, Lithium niobate(linbo3)
RL: USES (Uses)
(three-dimensional optical recording of binary-coded information in)

L3 ANSWER 31 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1993:569576 CAPLUS
DN 119:169576
ED Entered STN: 16 Oct 1993
TI A chemiluminescent and laser-induced fluorescent probe of a new low-lying $\alpha'\Omega = 1$ state of gaseous silver monofluoride
AU Wang, He; Gole, James L.
CS Sch. Phys., Georgia Inst. Technol., Atlanta, GA, 3033, USA
SO Journal of Molecular Spectroscopy (1993), 161(1), 28-43
CODEN: JMOSA3; ISSN: 0022-2852
DT Journal
LA English
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB A new A; 1 ($\Omega = 1$) state of AgF at the fringes of the visible region was excited and analyzed. The chemiluminescence from this state, which is located .apprx.4300 cm-1 below the previously known lowest excited A 0+ state, is observed for the first time in a beam-gas reaction where silver mols., Agx, are reacted with either atomic or mol. fluorine. Using pulsed laser-induced fluorescence, two vibrational bands (v',v")=(0, 0) and (1, 0) have been rotationally resolved and electronic and rotational assignments have been obtained. Mol. consts. which can reproduce the observed data with a standard deviation of 0.1 cm-1, the RKR potential energy curve, and the Franck-Condon factors for the A' 1-X1Σ+ transition have been determined The internal energy distributions of the reaction product

AgF mols. are studied by vibrational intensity anal. and rotational simulation calcns. The possible reaction paths to produce the excited A' state from either the four-center Ag2 + F2 or Agx (x ≥ 3) + F reactions and the formation of ground state AgF mols. are discussed through consideration of reactant-product correlations and energetics. The dissociation energy of the newly observed A' 1 state is 4649 ± 1400 cm-. The observation of this low-lying Ω = 1 state indicates the existence of similar stable ± = 1 states for the remaining silver halides, all of which should readily absorb visible photons. Their existence, which may have implications for the detailed understanding of the photog. process, provides intermediate states for multiple-resonance laser excitation and multiphoton laser ionization.

ST silver fluoride chemiluminescence laser fluorescence

IT Luminescence, chemi-
(of silver monofluoride)

IT Fluorescence
(laser-induced, of silver monofluoride)

IT 17761-13-6, Silver fluoride (107AgF) 19106-42-4, Silver fluoride (109AgF)
RL: PRP (Properties)
(Dunham coeffs. of)

IT 7775-41-9, Silver fluoride (AgF)
RL: PRP (Properties)
(chemiluminescence of laser induced fluorescence of)

IT 7440-22-4, Silver, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with fluorine atoms or mols., chemiluminescence in)

IT 7782-41-4, Fluorine, reactions 14762-94-8, Atomic fluorine, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with silver, chemiluminescence in)

L3 ANSWER 32 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1993:135976 CAPLUS
DN 118:135976
ED Entered STN: 30 Mar 1993
TI mechanism of the spectral sensitization of photographic layers
AU Meiklyar, P. V.
CS Kazan. Nauchno-Issled. Tekhnol. Inst. Khim.-Fotogr. Prom., Kazan, Russia
SO Zhurnal Nauchnoi i Prikladnoi Fotografii (1992), 37(6), 467-72
CODEN: ZNPFEK; ISSN: 0869-6144
DT Journal
LA Russian
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Kinetics was studied of two-photon step-wise spectral sensitization process. The obtained results agreed well with with a dependence of spectral sensitization on pAg, the ability of some dyes to inject holes or electrons into Ag halide, and with a quadratic dependence of anti-Stokes luminescence intensity and photocond. on radiation power at low temperature

ST spectral sensitization kinetics photog

IT Photography
(kinetics and mechanism of two-photon step-wise spectral sensitization in)

IT Photographic sensitizers
(spectral, mechanism and kinetics of two-photon step-wise sensitization process by)

L3 ANSWER 33 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1992:417064 CAPLUS
DN 117:17064
ED Entered STN: 11 Jul 1992
TI Recording, amplification, and discrimination in silver halide imaging

AU Hoffman, A.; Weiss, V.
CS Hanetz Photogr. Proc., Nes-Ziona, Israel
SO Journal of Photographic Science (1991), 39(6), 220-8
CODEN: JPTSAF; ISSN: 0022-3638
DT Journal
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB The photog. process is described by a unified theory that links light detection to chemical amplification. In this theory, named the photoelectrochem. (PEC) model, exposure to light or chems. is recorded in the silver halide grain as a change in its energy level. This concept was derived from the well known exptl. fact that photog. sensitivity and the redox environment of the grains are closely correlated. The model considers environmental influences on grain defects, termed oxidized states. The amplified detector quantum sensitivity is derived to be inversely proportional to the number of oxidized states in the grains. Oxidized states are therefore concluded to be the main detector loss channel and sensitization is taken to be the process of decreasing their number Amplification is controlled, by the grain's energy level through the induction period of development. Fog (or noise) is described and quantified by the newly introduced concept of amplified image to background discrimination, where the chemical developer differentiates in an analog manner. As a consequence, the presence of a Ag speck is not a decisive, digital requirement for the amplification process to be initiated. The highest photog. quantum sensitivity of 2 photons/grain is predicted, limited by photon noise. Quant. agreement between the PEC-model's predictions and published exptl. data is presented in the case of polyvalent metal doping and S plus Au-H hypersensitized AgBr emulsions. The model is used to examine current shortcomings of latent image theories from a different viewpoint.
ST photoelectrochem redox model photog process; light detection chem amplification photog photoelectrochem
IT Photography
(photoelectrochem. model as unified theory in)
IT Redox reaction
(photoelectrochem., in photog. process, unified theory for light detection and chemical amplification in)

L3 ANSWER 34 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1991:593952 CAPLUS
DN 115:193952
ED Entered STN: 01 Nov 1991
TI Achieving high quantum sensitivities with hydrogen hypersensitization. 2. Mechanism
AU Hailstone, R. K.; Liebert, N. B.; Levy, M.; Hamilton, J. F.
CS Photogr. Res. Lab., Eastman Kodak Co., Rochester, NY, 14650, USA
SO Journal of Imaging Science (1991), 35(4), 219-30
CODEN: JISCEJ; ISSN: 8750-9237
DT Journal
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB The nucleation-and-growth model of latent-image formation is used to study possible mechanisms of H hypersensitization. The effects of H treatment are modeled by assuming that it creates adsorbed metallic Ag centers that either facilitate destruction of photoholes or provide latent-image precursors. To model the former case, a hole removal event is added to the simple nucleation-and-growth model. A variant of this approach is the extra electron mechanism, which allows for the release of an electron to the conduction band when the hole removal events cause the Ag centers to reach the single-atom state. Of the models studied, the only one consistent with our exptl. data is based on hole removal in which the extra electron mechanism is operative. This agreement with exptl. data is

achieved only when the hole removal rate constant is set to a value that is much higher than those for the other events in latent-image formation. H hypersensitization leads to a large fraction of grains that require only 2 photons for developability, whereas it has no effect on the min. developable size of 3 atoms. H hypersensitization also markedly increases the number of development centers for high-intensity exposure. These 2 results provide strong evidence for the validity of the extra electron mechanism. Recombination is the limiting inefficiency in S + Au sensitized emulsion, and the quantum sensitivity is improved through efficient hole removal followed by release of an electron at centers created during the H hypersensitization.

ST hydrogen hypersensitization photog emulsion latent image; sensitizer photog development excess electron mechanism

IT Photographic emulsions
(hydrogen hypersensitization by, mechanism in)

IT Trapping and Traps
(in photog. nucleation and growth model of latent image formation, hydrogen hypersensitization mechanism in)

IT Process simulation, physicochemical
(of nucleation and growth model of latent image formation, hydrogen hypersensitization mechanism in relation to)

IT Photographic sensitizers
(hyper-, hydrogen, mechanism of)

IT 7704-34-9, Sulfur, uses and miscellaneous
RL: USES (Uses)
(photog. emulsion sensitized by gold and, hydrogen hypersensitization mechanism in)

IT 1333-74-0, Hydrogen, uses and miscellaneous
RL: USES (Uses)
(photog. hypersensitization by, mechanism of)

IT 7440-57-5, Gold, uses and miscellaneous
RL: USES (Uses)
(photog. silver bromide emulsion sensitized by sulfur and, hydrogen hypersensitization mechanism in)

L3 ANSWER 35 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1991:256765 CAPLUS
DN 114:256765
ED Entered STN: 28 Jun 1991
TI Physical processes during spectral sensitization of photographic layers
AU Meiklyar, P. V.
CS USSR
SO Zhurnal Nauchnoi i Prikladnoi Fotografii i Kinematografii (1990), 35(6), 483-91
CODEN: ZNPFAG; ISSN: 0044-4561
DT Journal; General Review
LA Russian
CC 74-0 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB A review with 73 refs. in which the problem of energy deficit during dye spectral sensitization of Ag halides is addressed. Participation of 2-photon processes is discussed.
ST review photog dye spectral sensitization
IT Photochemistry
(during spectral sensitization of photog. layers)
IT Silver halides
RL: USES (Uses)
(phys. processes during spectral sensitization of)
IT Photographic sensitizers
(spectral, phys. processes in sensitization mechanism by)

L3 ANSWER 36 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1991:132195 CAPLUS
DN 114:132195

ED Entered STN: 06 Apr 1991
TI Even-parity excited states of silver(1-) centers in alkali halides
AU Bellatreccia, M.; Casalboni, M.; Francini, R.; Grassano, U. M.
CS Dip. Fis., Univ. Roma "Tor Vergata", Rome, 00173, Italy
SO Physical Review B: Condensed Matter and Materials Physics (1991), 43(3), 2334-8
CODEN: PRBMDO; ISSN: 0163-1829
DT Journal
LA English
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Two-photon excitation of the Ag- centers in RbCl, RbBr, and KCl were measured. From the dependence of luminescence on the polarization of the exciting beams, the symmetry of the final levels could be obtained. In all 3 host crystals, we observed an intense band assigned to the 1A1g → 1A1g transition. At higher energies 1A1g → 1Eg and 1A1g → 1T2g transitions could be identified, but their presence and intensity change in the different crystals. On the high-energy side of the investigated range, an intense luminescence signal was observed arising from a 2-step excitation process; the exciting photon energy becoming resonant with the 3T1u state (A band).
ST luminescence silver anion center alkali halide; even parity excited state silver anion
IT Alkali metal halides, properties
RL: PRP (Properties)
(even-parity excited states of silver anion centers in, luminescence study of)
IT Photon
(excitation by 2, of silver anionic centers in alkali metal halides)
IT Luminescence
(of silver anionic centers in alkali metal halides)
IT Energy level
(excited, even-parity, of silver anion centers in alkali metal halides)
IT Energy level excitation
(two-photon, of silver anionic centers in alkali metal halides)
IT 19498-54-5, Silver(1-), properties
RL: PRP (Properties)
(even-parity excited state of, in alkali metal halides, luminescence study of)
IT 7447-40-7, Potassium chloride, properties 7789-39-1, Rubidium bromide 7791-11-9, Rubidium chloride, properties
RL: PRP (Properties)
(even-parity excited states of silver anion centers in, luminescence study of)

L3 ANSWER 37 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1990:108362 CAPLUS
DN 112:108362
ED Entered STN: 18 Mar 1990
TI Quantum chemical investigations of the latent image formation. III. Adsorption of silver ions (Agn+, Agn, and Agn-) (n ≤ 2) on a (100) silver bromide surface
AU Flad, J.; Stoll, H.; Nicklass, A.; Preuss, H.
CS Inst. Theor. Chem., Univ. Stuttgart, Stuttgart, Germany
SO Zeitschrift fuer Physik D: Atoms, Molecules and Clusters (1990), 15(1), 79-86
CODEN: ZDACE2; ISSN: 0178-7683
DT Journal
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB The alternating process of adsorption of Ag+ and trapping of a photoelectron on a (100) AgBr surface is investigated by quantum chemical calcns. The results give some insight into the initial steps of the

photog. process (absorption of two photons which lead to the formation of a sublatent image).
ST latent photog image quantum chem; silver ion adsorption quantum mech
IT Photography
(latent image in, quantum chemical study of)
IT Adsorption
(of silver ion clusters on silver bromide, quantum chemical study of, photog. latent image in relation to)
IT Quantum chemistry
(photog. latent image formation study by)
IT Adsorbed substances
(silver ion clusters, on silver bromide surface, quantum chemical study of latent image formation in relation to)
IT Clusters
(silver, in formation of photog. latent image, quantum chemical calcns. for)
IT 7785-23-1, Silver bromide
RL: PRP (Properties)
(adsorption of silver ions and particles on surface of, quantum chemical study of, photog. latent image formation in relation to)
IT 7440-22-4, Silver, uses and miscellaneous 14701-21-4, Silver ion(1+), uses and miscellaneous
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(adsorption of, on silver bromide surface, quantum chemical study of, photog. latent image formation in relation to)
IT 7440-22-4D, Silver, ions, uses and miscellaneous
RL: USES (Uses)
(cluster, quantum chemical calcns. for, photog. latent image formation in relation to)

L3 ANSWER 38 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1990:14093 CAPLUS
DN 112:14093
ED Entered STN: 06 Jan 1990
TI Two-photon induced chemical reactions in liquids
AU Chen, C. H.; McCann, M. P.
CS Chem. Phys. Sect., Oak Ridge Natl. Lab., Oak Ridge, TN, 37831-6378, USA
SO AIP Conference Proceedings (1989), Volume Date 1988, 191(Adv. Laser Sci.-4), 354-6
CODEN: APCPCS; ISSN: 0094-243X
DT Journal
LA English
CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB A 2-photon absorption process was used to produce significant quantities of reaction products between halogen-containing organic compds. and Ag-containing inorg. compds. in the condensed phase. The mechanisms for these chemical reactions were studied and confirmed by 2-photon absorption spectra and optoaccoustic methods.
ST org halide silver compd laser photoreaction
IT Photolysis
(laser-induced, of organic halide-silver compound mixture, 2-photon induced reactions in liquid)
IT 2396-01-2P, Phenyl 10097-32-2P, Bromine atom, preparation
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, in 2-photon induced chemical reactions in liqs. containing bromobenzene)
IT 3170-80-7P 22537-15-1P, Chlorine atom, preparation
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, in 2-photon induced chemical reactions in liqs. containing carbon tetrachloride)
IT 7783-90-6P, Silver chloride, preparation 7785-23-1P, Silver bromide
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, in 2-photon laser photoreaction of

silver nitrates with organic halide in solution)
IT 56-23-5, Carbon tetrachloride, reactions 75-09-2, Dichloromethane, reactions 108-86-1, Bromobenzene, reactions 591-50-4, Iodobenzene 7761-88-8, Silver nitrate, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(laser 2-photon induced photoreaction of, with carbon tetrachloride in liquid phase)

L3 ANSWER 39 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1988:445966 CAPLUS
DN 109:45966
ED Entered STN: 05 Aug 1988
TI Achieving high quantum sensitivities with hydrogen hypersensitization. 1. Measurement
AU Hailstone, R. K.; Liebert, N. B.; Levy, M.; McCleary, R. T.; Girolmo, S. R.; Jeanmaire, D. L.; Boda, C. R.
CS Photogr. Res. Lab., Eastman Kodak Co., Rochester, NY, 14650, USA
SO Journal of Imaging Science (1988), 32(3), 113-24
CODEN: JISCEJ; ISSN: 8750-9237
DT Journal
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Hypersensitization of an AgBr emulsion containing 0.475-μm octahedra was used to study the limits to quantum sensitivity. A detailed discussion of our procedure for determining quantum sensitivity was included to build confidence in the results. Depending on the level of S+Au sensitization, the quantum sensitivities after H hypersensitization range from 2.0 ± 0.3 to 3.6 ± 0.5 absorbed photons/grain to make 50% of the grains developable, after correction for fog. These results are for 1-s exposure at 400 nm followed by 40-min development in a metol-ascorbic acid developer. Reciprocity data from 103 to 10-5 s illustrate that vacuum significantly reduces low-intensity reciprocity failure, whereas subsequent H hypersensitization increases speed uniformly over the range of exposure times studied. The results suggest that recombination is the dominant inefficiency in these emulsions. Previous work suggests the min. developable size of the latent image in these emulsions is 3 atoms, so that a possible limit to quantum sensitivity is 2.7 absorbed photons/grain. The quantum sensitivities of some of the emulsions are better than this limit and an anal. of the quantum sensitivity distributions indicates that about half the grains are made developable by the absorption of 2 photons. A likely explanation for these observations is that some centers created by H hypersensitization can be a source of conduction-band electrons when oxidized by photoholes.
ST hydrogen hypersensitization photog emulsion
IT Photographic sensitizers
(hydrogen hypersensitization in relation to, high quantum sensitivities with)
IT Photographic emulsions
(hydrogen hypersensitization of, high quantum sensitivities with)
IT 1333-74-0, Hydrogen, uses and miscellaneous
RL: USES (Uses)
(photog. emulsion hypersensitization with, high quantum sensitivities in)

L3 ANSWER 40 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1988:158901 CAPLUS
DN 108:158901
ED Entered STN: 30 Apr 1988
TI Some factors affecting quantum sensitivities of a silver halide emulsion
AU Spencer, Harry E.
CS Dep. Chem., Oberlin Coll., Oberlin, OH, 44074, USA
SO Journal of Imaging Science (1988), 32(1), 40-2
CODEN: JISCEJ; ISSN: 8750-9237

DT Journal
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB On the basis of data recently published by R. K. Hailstone et al. (1987), it is argued that in a S-plus-Au-sensitized AgBr emulsion exposure generates Ag2 and larger centers on nearly all grains which absorbed at least 2 photons. As contrasted to this efficient creation of centers, the detection of the centers by customary development is not as efficient. The Ag2 centers are too small to trigger development, unless the grains are light-latensified, which can also increase unwanted fog. Vigorous development needed to detect somewhat larger centers, perhaps 3-atom ones, also induces fog, and less vigorous development leads to less fog but only responds to even larger latent-image centers. It is suggested that increased quantum sensitivities can be attained either by more efficient growth of small centers into larger ones or more efficient detection of small centers. Renewed attention to processing details, including suppression of fog, is one way to attack the problem.
ST sulfur gold sensitivity center photog; quantum sensitivity silver halide emulsion
IT Photographic emulsions
(quantum sensitivities of, increase of)
IT Photographic sensitizers
(sulfur plus gold, factors affecting quantum sensitivity centers in presence of)
IT 12187-06-3P, Silver dimer, preparation
RL: PREP (Preparation)
(formation of sensitivity center of, in sulfur plus gold sensitized silver bromide emulsion)
IT 7704-34-9, Sulfur, uses and miscellaneous
RL: USES (Uses)
(photog. emulsion sensitized with gold and, factors affecting quantum sensitivities in)
IT 7440-57-5, Gold, uses and miscellaneous
RL: USES (Uses)
(photog. emulsion sensitized with sulfur and, factors affecting quantum sensitivities in)
IT 7785-23-1, Silver bromide
RL: USES (Uses)
(photog. emulsion, factors affecting quantum sensitivities of)

L3 ANSWER 41 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1987:524391 CAPLUS
DN 107:124391
ED Entered STN: 05 Oct 1987
TI Minimizing photographic sensitivity to environmental radiation by controlling silver halide emulsion morphology
AU Sowinski, A. F.; Wightman, P. J.
CS Photogr. Res. Lab., Eastman Kodak Co., Rochester, NY, 14650, USA
SO Journal of Imaging Science (1987), 31(4), 162-8
CODEN: JISCEJ; ISSN: 8750-9237
DT Journal
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB As photog. film speeds are increased by advances in technol., natural background radiation contributes significantly to the degradation of film performance with age. A natural-aging study of simple model emulsion coatings confirmed that the integrated exposure of film to background sources, which are heterogeneous and polychromatic, can be simulated by 60-cobalt γ radiation, which has 2-line photon spectrum. Thermal fog growth and radiation image accretion together accounted for all of the increases observed in film min. d. following

storage. In an experiment designed to simulate yearly environmental radiation exposure, tabular emulsions showed significantly reduced radiation sensitivity compared with conventional emulsions. Their radiation speeds, relative to their photog. speeds, were consistent with simple, geometric expectations based on grain size and morphol.

ST silver halide emulsion environmental radiation; aging simulation photog emulsion sensitivity; gamma radiation aging photog emulsion

IT Photographic emulsions
(minimizing sensitivity of, to environmental radiation, by control of silver halide grain size and morphol.)

IT Gamma ray, chemical and physical effects
(simulation of environmental radiation effects in photog. emulsion by)

L3 ANSWER 42 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1986:216339 CAPLUS
DN 104:216339
ED Entered STN: 14 Jun 1986
TI Shape of the D-log E curve and the critical size of latent-image centers
AU Spencer, H. E.; DeCann, C. A.; Levy, M.
CS Res. Lab., Eastman Kodak Co., Rochester, NY, 14650, USA
SO Journal of Imaging Science (1986), 30(2), 37-40
CODEN: JISCEJ; ISSN: 8750-9237
DT Journal
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

AB By microscopic examination of dilute coatings of cubic and octahedral grains of AgBr, the fraction was determined of developed grains for various times of exposure. The grains were reduction sensitized. The fraction of developed grains was plotted against log exposure showing that the curve shape for an emulsion containing octahedral grains is almost that of either a 4- or a 3-photon curve if the exposure time is 10-3 s, that of a 2-photon curve for 100 s, and that of a 1-photon curve for 3600 s. I.e., the shapes are nearly those that would be found if all of the grains became developable upon absorption of 4 photons per grain, 3, 2, or 1. An emulsion composed of cubic grains exhibit a 2-photon curve for 10-3 s and a 1-photon curve for 3600 s. Both the cubic and octahedral grains exhibit multiple development centers per grain. One cannot deduce the critical sizes of latent-image centers from these results.

ST crit size latent image center; silver bromide grain photog image

IT Photographic emulsions
(latent image center formation in, critical size of)

IT Photography
(latent image formation in, critical size of centers of)

L3 ANSWER 43 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1986:158351 CAPLUS
DN 104:158351
ED Entered STN: 03 May 1986
TI Two-photon resonant optical processes in atomic barium
AU Verma, R. D.; Jayawant, S. M.
CS Dep. Phys., Univ. New Brunswick, Fredericton, NB, E3B 5A3, Can.
SO Indian Journal of Physics, B (1986), 60B(1), 45-64
CODEN: IJPBDU; ISSN: 0252-9254
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB Two-photon resonant optical processes, involving 8 Rydberg states including 3 unidentified states of Ba were investigated using a pulsed dye laser at high resolution via the photog. method. About 70 observed coherent lines in the region 800-300 nm show large line

width and their center mass was shifted in frequency with respect to the corresponding atomic transitions which were identified for practically all observed lines. The main optical process involved in generation of these new waves was identified as the multiwave mixing via parametric oscillations through the processes ωs = 2ωL - ω1 - ω2 ± ω3 and ωs = 2ωL - ω1 - ω2 ± ω3 - ω4 ± ω5. Many of the ω1 were observed and verify the proposed coupling scheme. The line ωs, called the signal wave, connecting the ground state is split into 2 components, which is interpreted in terms of the phase mismatch condition.

ST two photon resonant process barium

IT Laser radiation, chemical and physical effects
(in two-photon resonant optical processes in barium)

IT Photon
(resonant optical processes of two, in barium)

IT 7440-39-3, properties
RL: PRP (Properties)
(two-photon resonant optical processes in)

L3 ANSWER 44 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN

AN 1986:2894 CAPLUS

DN 104:2894

ED Entered STN: 11 Jan 1986

TI Some notes on picosecond spectroscopy

AU Rentzepis, P. M.; Hopkins, J. B.

CS Bell Lab., Murray Hill, NJ, 07974, USA

SO Spectrosc. Dyn. Mol. Biol. Syst. (1985), 379-401. Editor(s): Bayley, Peter M.; Dale, Robert E. Publisher: Academic, London, UK.
CODEN: 54NSA8

DT Conference; General Review

LA English

CC 9-0 (Biochemical Methods)
Section cross-reference(s): 73

AB A review with 24 refs. about methods (2-photon, 3-photon fluorescence), recording apparatus (vidicons, photog. apparatus), lasers, and double-beam picosecond spectrometer for the title procedure and a specific example of its application to the study of rhodopsin in the visual transduction process.

ST review laser picosecond spectroscopy biochem; fluorometry picosecond laser biochem review

IT Rhodopsins
RL: PRP (Properties)
(picosecond spectroscopy of)

IT Spectrometers
(laser, for picosecond spectroscopy of biomols.)

IT Fluorometry
Spectrometry
Ultraviolet and visible spectrometry
(laser, ps, of biomols.)

L3 ANSWER 45 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN

AN 1985:550445 CAPLUS

DN 103:150445

ED Entered STN: 01 Nov 1985

TI High-precision measurements of Doppler-free two-photon transitions in rubidium: new values for proposed dye-laser reference wavelengths

AU Sansonetti, Craig J.; Weber, K. H.

CS Natl. Meas. Lab., Natl. Bur. Stand., Gaithersburg, MD, 20899, USA

SO Journal of the Optical Society of America B: Optical Physics (1985), 2(9), 1385-91
CODEN: JOBPDE; ISSN: 0740-3224

DT Journal

LA English

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB New measurements were made of the 85Rb 5s-ns Doppler-free 2-photon transitions (n = 14-50) with estimated accuracy of better than 1 part in 108. The wavelength of the dye laser was measured by using photog. Fabry-Perot interferometry. The results differ systematically by as much as 7 parts in 108 from the previous measurements. These 2-photon transitions can be used as reference lines for dye-laser wavelength calibration. The observed discrepancies cannot be explained by known systematic shifts of the Rb levels in the thermionic diode detectors employed in both expts. The accuracy was confirmed of the interferometric wavelengths by measuring Doppler-free saturated absorption lines in 127I2. These results suggest that recently reported Rydberg-state measurements in Li, K, Rb, and Cs, which were calibrated with respect to the previous measurements of the 85Rb 5s-ns transitions, may require revision.

ST rubidium two photon transition

IT Laser radiation
(absorption of two photons of, by rubidium-85, Doppler-free)

IT Photon
(absorption of two, by rubidium-85, Doppler-free)

IT Lasers
(dye, proposed reference wavelengths for)

IT Dyes
(laser, proposed reference wavelengths for)

IT 13982-12-2, properties
RL: PRP (Properties)
(Doppler-free two-photon transitions in)

L3 ANSWER 46 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN

AN 1985:495937 CAPLUS

DN 103:95937

ED Entered STN: 22 Sep 1985

TI Electrographic detectors versus charge-coupled devices: a comparison of two quality panoramic detectors for stellar photometry

AU Heckathorn, H. M.; Opal, C. B.; Seitzer, P.; Green, E. M.; Bozyan, E. P.

CS E. O. Hulburt Cent. Space Res., U. S. Nav. Res. Lab., Washington, DC, USA

SO Advances in Electronics and Electron Physics (1985), 64A, 153-65
CODEN: AEEPAR; ISSN: 0065-2539

DT Journal

LA English

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB The relative merits and practicality of 2 integrating photon detector systems were evaluated for the specific problem of accurate wide-band photometry of large nos. of faint stars: a Griboval electrog. camera used on the f/10 1-m aperture Yale telescope at Cerro Tololo and a thinned, rear-side illuminated RCA CCD mounted at the f/2.6 prime focus of the CTIO 4-m telescope. A field in the outskirts of the globular star cluster ω Centauri which included faint photoelec. and photog. smoothed sequences was chosen as a test object and observed in the B and V passbands with both instruments. The 2 sets of images were then subjected to a variety of tests and comparisons to characterize their photometric properties. Relative detective quantum efficiency was determined from internal errors of star magnitude measurements on different exposures and also from background noise statistics.

ST detector comparison star photometry

IT Optical detectors
(electrog. and charge-coupled devices, comparison of, for stellar studies)

IT Stars
(photometry of, comparison of electrog. detectors and charge-coupled devices for)

IT Photometry

(stellar, comparison of electrog. detectors and charge-coupled devices for)

L3 ANSWER 47 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1985:462410 CAPLUS
DN 103:62410
ED Entered STN: 24 Aug 1985
TI Image correlation at low light levels
AU Morris, G. Michael; Wernick, Miles N.; Isberg, Thomas A.
CS Inst. Opt., Univ. Rochester, Rochester, NY, 14627, USA
SO Optics Letters (1985), 10(7), 315-17
CODEN: OPLEDP; ISSN: 0146-9592
DT Journal
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Low-light-level input images were cross correlated with a classical intensity reference image that is stored in a computer memory. Exptl. measurements of the correlation signal, obtained by using a 2 -dimensional, photon-counting detector and position-computing electronics, are reported. The exptl. results are in good agreement with theor. predictions.
ST image correlation low light level; photoimaging low light level; optical image low light level; photog image low light level
IT Photography
(image correlation and low light levels for)
IT Photoimaging compositions and processes
(image correlation at low light levels in relation to)
IT Optical detectors
(photon, in image correlation at low light levels)
IT Recording
(optical, image correlation at low light levels in relation to)

L3 ANSWER 48 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1985:229349 CAPLUS
DN 102:229349
ED Entered STN: 29 Jun 1985
TI Critical sizes of development centers in chemically sensitized emulsions
AU Hada, Hiroshi; Kawasaki, Mitsuo
CS Dep. Ind. Chem., Kyoto Univ., Kyoto, 606, Japan
SO Journal of Imaging Science (1985), 29(2), 51-60
CODEN: JISCEJ; ISSN: 8750-9237
DT Journal
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB The critical size of Ag or Ag-Au centers for grain development was investigated in detail for various chemical sensitized emulsions. This was done by comparing exptl. data for the fraction of developed grains as a function of exposure to the theor. curves obtained from Poisson statistics. The validity and the applicability of this method is also discussed in detail. The Ag latent image center of the critical size is Ag4 for both unsensitized and S-sensitized emulsions, but the activity of latent subimage centers to initiate development is largely enhanced in S-sensitized emulsion to that the term critical is rather poorly defined. The enhancement is interpreted in terms of the MO interaction between the electron-trapping levels of Ag sulfide speck and subimage center. Enhancement of developability is also brought about by Au latensification. The critical sizes of the Ag-Au centers for Au latensified emulsions are AgAu or Au2 for S-sensitized emulsion, and Ag2Au, AgAu2, or Au3 for unsensitized ones. The latent image center in S + Au-sensitized emulsion is likely to incorporate Au atoms and the critical size is either Ag2Au, AgAu2, or Au3. The enhancement of the catalytic activity of the subimage center is only slightly observed for the S + Au-sensitized emulsion, owing to the potentially less effective electron-trapping level of a Ag-Au sulfide

speck than that for Ag sulfide. The latent image center of critical size is also Ag4 in the reduction-sensitized emulsion, but the center is created by the absorption of only 2 effective photons, which is explained in terms of the hole-trapping mechanism of the reduction
ST development center photog crit size; emulsion chem sensitization development center
IT Photographic emulsions
(chemical sensitized, critical sizes of development centers in)

L3 ANSWER 49 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1985:195030 CAPLUS
DN 102:195030
ED Entered STN: 02 Jun 1985
TI Color center cooperative breeding - a new kind of photosensitivity
AU Glebov, L. B.; Nikonorov, N. V.; Petrovskii, G. T.
CS Gos. Opt. Inst. im. Vavilova, Leningrad, USSR
SO Doklady Akademii Nauk SSSR (1985), 280(5), 1110-14 [Phys.]
CODEN: DANKAS; ISSN: 0002-3264
DT Journal
LA Russian
CC 74-9 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Photosensitivity towards long wave radiation was observed in photochromic Ag halide- and Cu halide-glasses at sufficiently high irradiation intensity. A coloration mechanism was a chain reaction sensitized by primary products of a photochem. reaction. In this process 2 color centers formed by an initial IR irradiation are excited by absorption of the next 2 IR photons and transfer the energy to Cu+ which undergoes ionization liberating electrons. This electron generates one more color center.
ST photochromic copper silver halide glass; IR sensitivity photochromic glass
IT Color centers
(IR-induced, in photochromic glasses, chain reaction in formation of)
IT Copper halides
Silver halides
RL: USES (Uses)
(photochromic glasses containing, IR photosensitivity of, mechanism in)
IT Glass, oxide
RL: USES (Uses)
(photochromic, containing silver or copper halides, IR sensitivity of, mechanism of color centers formation in)

L3 ANSWER 50 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1985:157325 CAPLUS
DN 102:157325
ED Entered STN: 04 May 1985
TI Spectral band assignments for copper(1+) and silver(1+) in alkali halides via two-photon spectroscopy
AU McClure, Donald S.; Pedrini, Christian
CS Dep. Chem., Princeton Univ., Princeton, NJ, 08544, USA
SO Journal of Luminescence (1984), 31-32(1), 197-200
CODEN: JLUMA8; ISSN: 0022-2313
DT Journal
LA English
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The 3d → 4s absorption bands of Cu+ and Ag+ in NaCl, etc., can be dissected and their symmetries assigned by using the polarization properties of their 2-photon spectra.
ST absorption band copper silver sodium chloride; luminescence copper silver sodium chloride
IT Luminescence
Ultraviolet and visible spectra
(of alkali metal halides containing copper(1+) and silver(1+) ions)
IT Photon

(processes of 2, in alkali metal halides containing copper(1+) and silver(1+) ions)
IT Alkali metal halides, properties
RL: PRP (Properties)
(spectral band assignments for copper(1+) and silver(1+) in, via two-photon spectroscopy)
IT 7647-14-5, properties 7681-49-4, properties
RL: PRP (Properties)
(spectral band assignments for copper(1+) and silver(1+) in, via two-photon spectroscopy)
IT 14701-21-4, properties 17493-86-6, properties
RL: PRP (Properties)
(spectral band assignments for, in alkali halides via two-photon spectroscopy)

L3 ANSWER 51 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1984:560542 CAPLUS
DN 101:160542
ED Entered STN: 27 Oct 1984
TI Two-photon spectroscopy of ions in crystals: copper(1+) and silver(1+) in the alkali halides
AU Payne, Stephen A.; Goldberg, Andrea B.; McClure, Donald S.
CS Dep. Chem., Princeton Univ., Princeton, NJ, 08544, USA
SO Journal of Chemical Physics (1984), 81(4), 1529-37
CODEN: JCPSA6; ISSN: 0021-9606
DT Journal
LA English
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The 2-photon (TP) spectra of the Cu+ and Ag+ impurities in some alkali chloride hosts were obtained; here the ion is situated in a nearly octahedral chloride environment. Since the d → s transitions observed in the near UV are electronically allowed in TP spectroscopy (δ = 3 gm), a simple theory of the polarization studies, in conjunction with the DV-Xα computer code led to a definitive characterization of the 1Eg, 1T2g crystal field splitting of the d9s excited state. Evidence was obtained of the Jahn-Teller effect in the 1Eg(d9s) state as well as a good understanding of the mixing of the 1Eg, 1T2g states resulting from the dynamic and static displacements of Cu+. The absolute value of the 2-photon cross section was measured and compared to a calculated value.
ST two photon copper alkali chloride; silver luminescence two photon; copper alkali chloride two photon
IT Laser radiation, chemical and physical effects
(absorption of two photons of, by alkali metal chlorides containing copper or silver ion impurities)
IT Luminescence
(of copper or silver ion impurities in alkali metal chlorides, two-photon absorption in relation to)
IT Photon
(processes of two, in alkali metal chlorides containing copper or silver ion impurities)
IT Alkali metal chlorides
RL: PRP (Properties)
(two-photon spectroscopy of, containing copper or silver ion impurities)
IT Optical absorption
(two-photon, of copper- and silver-containing alkali halides)
IT 14701-21-4, properties 17493-86-6, properties
RL: PRP (Properties)
(two-photon spectroscopy of alkali metal chlorides containing)
IT 7447-40-7, properties 7447-41-8, properties 7681-49-4, properties

RL: PRP (Properties)
(two-photon spectroscopy of, containing copper ion impurity)
IT 7647-14-5, properties
RL: PRP (Properties)
(two-photon spectroscopy of, containing copper or silver ion impurities)

L3 ANSWER 52 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1984:77012 CAPLUS
DN 100:77012
ED Entered STN: 12 May 1984
TI Diffraction of statistically independent photons from a laser source: detection of the diffraction pattern with a high-gain photomultiplier
AU Panarella, E.; Guty, V.
CS Natl. Res. Counc., Ottawa, ON, K1A 0R6, Can.
SO Speculations in Science and Technology (1983), 6(4), 383-90
CODEN: SPSTDD; ISSN: 0155-7785
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB An experiment recently performed of diffraction with statistically independent laser photons, in which the photons were revealed with high sensitivity photog. film, was repeated, this time with a high gain photomultiplier. The exptl. results confirm the previous results, namely that the diffraction pattern is destroyed when the probability of having 1 photon at a time within the diffraction apparatus is higher than the probability of having .gtoreq.2 photons. These probabilities are calculated assuming that the photon statistics are Poisson, and that the interference or diffraction process itself is Poisson (i.e., independent of particle statistics). The relation is satisfied in order to have a high probability for 1 photon to be alone within the diffraction or interference apparatus is $\lambda 0\tau < 0.69$, where $\lambda 0$ is the photon flux and τ is the transit time within the apparatus When this relation is satisfied, the experiment indicates that the diffraction pattern is destroyed. This confirms that .gtoreq.2 photons (and certainly more) are required for diffraction effects to occur and that packets of photons are a better model than packets of waves or wave packets to explain diffraction phenomena of light.
ST diffraction statistically independent photon laser
IT Photon
(diffraction of statistically independent)
IT Laser radiation
(diffraction of statistically independent photons of)
IT Optical diffraction
(of statistically independent photons from laser source, with detection of diffraction pattern with high-gain photomultiplier)

L3 ANSWER 53 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1983:225178 CAPLUS
DN 98:225178
ED Entered STN: 12 May 1984
TI Quantum yield of the primary photochemical process in a silver halide system
AU Kartuzhanskii, A. L.; Kekhva, T. E.; Plachenov, B. T.
CS USSR
SO Uspekhi Nauchnoi Fotografii (1982), 21, 58-64
CODEN: UNFKAS; ISSN: 0502-823X
DT Journal
LA Russian
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB The effect of the Ag atomic centers (thermodn. equilibrated lattice point defects) which are present in a photog. emulsion before light

exposure on photolysis of Ag halide was investigated. The most probable structure of the centers comprised Ag02 group. Absorption of a photon can lead to the formation of Ag03, 2 photon to Ag04 (with a formal quantum efficiency of 3 and 2, resp.).

ST photolysis silver halide quantum efficiency; latent image quantum efficiency photog; silver center photog emulsion

IT Photography
(latent image formation in, quantum yield of primary photochem. processes in silver halide system in relation to)

IT Photographic emulsions
(quantum yield of primary photochem. processes in)

IT 7440-22-4P, preparation
RL: PREP (Preparation)
(aggregates, formation and role of, in primary photochem. processes in silver halide system)

L3 ANSWER 54 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1983:116347 CAPLUS
DN 98:116347
ED Entered STN: 12 May 1984
TI The ~A1A1-~X1A1 two-photon fluorescence excitation spectrum of 1,2-difluorobenzene
AU Hollas, J. Michael; Langham, Barry J.; Musa, Hamdan; Ridley, Trevor
CS Dep. Chem., Univ. Reading, Reading/Berks., RG6 2AD, UK
SO Journal of Molecular Spectroscopy (1983), 97(2), 405-19
CODEN: JMOSA3; ISSN: 0022-2852
DT Journal
LA English
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The 2-photon fluorescence excitation spectrum of 1,2-difluorobenzene was obtained with a tunable dye laser calibrated using a combination of the Ne optogalvanic spectrum and etalon fringes. The spectrum consists only of A1-A1 bands, but the use of linear and circular polarization divides the bands into 2 types. The 000 type retains its intensity in circular polarization and, rotationally, shows little or no zero-rank contribution. The 501 (or 1401) types loses much of its intensity in circular polarization and, rotationally, shows a large zero-rank contribution. These observations all accord with the trace of the 2-photon transition tensor being close to zero for the 000 type and large for the 501 type, the latter type being involved in vibronic interaction which mixes the ~A and ~X states. There is strong evidence for Fermi resonance between the 51 and 61101 levels. Parts of the 1-photon absorption spectrum were photog. to aid sequence identification and also to look for the 501, A1-A1 transition. This transition is not observed: nor is there any evidence for intensity stealing by b2 vibrations.

ST fluorescence two photon fluorobenzene; benzene difluoro fluorescence two photon

IT Laser radiation, chemical and physical effects
(fluorescence excitation by 2 photons of, of difluorobenzene)

IT Photon
(fluorescence excitation by 2, of difluorobenzene)

IT Fluorescence
(of difluorobenzene, 2-photon excitation in)

IT 367-11-3
RL: PRP (Properties)
(fluorescence excitation spectrum of, 2-photon)

L3 ANSWER 55 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1983:79321 CAPLUS
DN 98:79321
ED Entered STN: 12 May 1984

TI Delayed cascades
AU King, D. T.
CS Phys. Dep., Univ. Tennessee, Knoxville, TN, 37996, USA
SO Physical Review D: Particles and Fields (1983), 27(3), 647-9
CODEN: PRVDAQ; ISSN: 0556-2821
DT Journal
LA English
CC 70-1 (Nuclear Phenomena)
AB Emission of electromagnetic cascades due to photons of energies >3 GeV from 300-GeV p-nucleus collisions was studied in emulsion. The curious delayed-cascading effect is evidently much enhanced at larger emission angles, >25 mrad. Samples of 384 normal cascades and 642 slow cascades were extracted from among those cascades of long (>20 mm) rectilinear path length. The angular distribution shown by the slow cascades is different from that for the normal cascades. Two kinds of photons might convert to primary pairs in the experiment
ST photon cascade proton photoemulsion; gamma cascade proton photoemulsion
IT Gamma ray
Photon
(delayed cascade, from proton interactions in photoemulsion)
IT Nuclear photographic emulsions
(proton interactions in, delayed photon cascade from)
IT 12586-59-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(interactions of, in photoemulsions, delayed photon cascades from)

L3 ANSWER 56 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1982:93603 CAPLUS
DN 96:93603
ED Entered STN: 12 May 1984
TI Expedient treatment of three-dimensional electron-photon cascade-showers observed in the emulsion chambers
AU Hotta, N.; Sakata, M.; Yamamoto, Y.; Miyanishi, M.; Dake, S.; Kasahara, K.; Yuda, T.; Mizutani, K.; Ohta, I.
CS Dep. Phys., Konan Univ., Kobe, Japan
SO ICR-Rep. - Univ. Tokyo, Inst. Cosmic Ray Res. (1981), ICR-Report-97-81-13, 48 pp.
CODEN: IRRED3
DT Report
LA English
CC 71-7 (Nuclear Technology)
AB The emulsion chambers with different inhomogeneity parameters were exposed to the 50-, 100- and 300-GeV e beams at Fermilab to study the cascade shower profiles systematically. Measured shower profiles near the axis satisfied the similarity relation well if the dilution and reduction factor, which describes the inhomogeneity effects caused by the gap in the chamber, was appropriately conjoined with the radial spread of showers. An anal. expression is given which allows an extrapolation of the measured data up to higher energies and also up to other chambers with different inhomogeneous structure.
ST emulsion chamber cascade shower; electron photon cascade shower
IT Radiation detectors
(emulsion chambers, 3-dimensional electron-photon cascade showers in, treatment of)
IT Nuclear photographic emulsions
(in observation of electron-photon cascade showers)

L3 ANSWER 57 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1977:98899 CAPLUS
DN 86:98899
ED Entered STN: 12 May 1984
TI X-ray calibration of RAR 2490 film for application to laser plasma experiments
AU Benjamin, Robert F.; Lyons, Peter B.; Day, Robert H.
CS Los Alamos Sci. Lab., Univ. California, Los Alamos, NM, USA

SO Applied Optics (1977), 16(2), 393-7
CODEN: APOPAI; ISSN: 0003-6935
DT Journal
LA English
CC 73-8 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)
Section cross-reference(s): 74
AB An x-ray sensitometric calibration of Kodak RAR 2490 film was performed over the 0.28-8.04-keV range of photon energies. The characteristic curves (optical d. D vs. exposure H) are fit well over the entire range by a 2-parameter, analytic function, log10(10D-1) = A log10H + B. Solarization occurs at an exposure of 2 + 103 photons/(μm)2 for 1.49-keV photons. A comparison with other films is made.
ST laser plasma RAR 2490
IT Laser radiation, chemical and physical effects
(plasmas, calibration of RAR 2490 film for expts. in)
IT Photographic films
(x-ray calibration of RAR 2490, for laser plasma expts.)
IT Plasma
(laser-induced, x-ray calibration of RAR 2490 film for photog . in)

L3 ANSWER 58 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1977:49132 CAPLUS
DN 86:49132
ED Entered STN: 12 May 1984
TI Use of hydrogen hypersensitization to diminish recombination and produce emulsion coatings of high quantum efficiency
AU Babcock, T. A.; James, T. H.
CS Res. Lab., Eastman Kodak Co., Rochester, NY, USA
SO Journal of Photographic Science (1976), 24(1), 19-24
CODEN: JPTSAF; ISSN: 0022-3638
DT Journal
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic Processes)
AB Loss of photog. efficiency in fine-grain, monodisperse AgBr and Ag(Br,I) emulsions due to the interaction of the photoelectrons with O and moisture and to recombination was largely eliminated by vacuum outgassing and H hypersensitization prior to exposure. Characteristic curves were obtained that closely fit a 2- to 3-photon theor. curve, both in curve shape and in position on the exposure axis, for a S-plus-Au sensitized emulsion, and a 4-photon curve for an emulsion prepared initially without deliberate chemical sensitization. Cyanine dyes with cathodic potentials in the range of -0.25 to -0.9 V and anodic potentials above 0.8 V showed no desensitization of the vacuum outgassed, H hypersensitized iodobromide emulsion, even though they strongly desensitized the untreated emulsion for exposure in air. All the dyes were efficient spectral sensitizers for exposure under vacuum after the H hypersensitization. Without this treatment, no spectral sensitization was obtained for exposure in air, owing to severe losses of photoelectrons by recombination of trapped electrons with mobile holes and by interaction with O and moisture.
ST hydrogen hypersensitization photog emulsion
IT Recombination of electron with hole
(in photog. emulsions, vacuum outgassing and hydrogen hypersensitization in elimination of)
IT Photographic emulsions
(vacuum outgassing of, for improved sensitivity)
IT Photographic sensitizers
(hyper-, hydrogen as)
IT 1333-74-0, uses and miscellaneous
RL: USES (Uses)
(hypersensitization by, of photog. emulsions)

L3 ANSWER 59 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1975:555410 CAPLUS
DN 83:155410
ED Entered STN: 12 May 1984
TI Generation of single-picosecond dye laser pulses using one- and two-photon traveling-wave excitation
AU Rubinov, A. N.; Richardson, M. C.; Sala, K.; Alcock, A. J.
CS Div. Phys., Natl. Res. Counc. Canada, Ottawa, ON, Can.
SO Applied Physics Letters (1975), 27(6), 358-60
CODEN: APPLAB; ISSN: 0003-6951
DT Journal
LA English
CC 73-6 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)
Section cross-reference(s): 74
AB Single-photon and 2-photon traveling-wave excitation of superradiant emission in Rhodamine 6G by single-picosecond 1.06-μ laser pulses is reported. In addition, results are presented on the application of optical Kerr-effect photography to a time-resolved spectroscopic study of the dye laser emission.
ST Rhodamine 6G superradiant laser; Kerr effect photog
IT Electric birefringence
Electrooptical effect
(Kerr effect photog.)
IT Photon
(Rhodamine 6 G superradiant emission with pumping by 1 or 2)
IT Lasers
(Rhodamine 6 G, superradiant picosecond)
IT Dyes
(lasers, superradiant picosecond)
IT Superradiance
(of Rhodamine 6 G)
IT Photography
(optical Kerr effect)
IT 989-38-8
RL: DEV (Device component use); USES (Uses)
(lasers, superradiant picosecond)

L3 ANSWER 60 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1975:469053 CAPLUS
DN 83:69053
ED Entered STN: 12 May 1984
TI Two-photon mechanism of sensitized photolysis of silver halides
AU Ovsyankin, V. V.; Feofilov, P. P.
CS USSR
SO Fizika Tverdogo Tela (Sankt-Peterburg) (1975), 17(4), 1075-9
CODEN: FTVTAC; ISSN: 0367-3294
DT Journal
LA Russian
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic Processes)
AB Sensitized photolysis of Ag halide is a 2-photon process, in spite of the apparent contradiction, related to the necessity of explanation of the linearity of the process over a broad interval of intensities and its high quantum yield. In terms of the investigation of the observed cooperative luminescence of Ag halide salts and sensitized photog. emulsions and the notions about alternate nature of the processes of direct photolysis and recombination luminescence of Ag halides it is concluded that a considerable role is played by the 2-quantum cooperative mechanisms of sensitization in the photog. process.
ST sensitized photolysis silver halide
IT Photolysis
(of silver halides, two-photon mechanism in sensitized)

IT Silver halides
RL: RCT (Reactant); RACT (Reactant or reagent)
(photolysis of, two-photon mechanism of sensitized)
IT Photography
(sensitization, two-photon mechanism in)

L3 ANSWER 61 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1975:469050 CAPLUS
DN 83:69050
ED Entered STN: 12 May 1984
TI Quantum yield in the Herschel effect
AU Fonkich, M. E.; Chibisov, K. V.
CS Cherkassk. Gos. Pedagog. Inst., Cherkassy, USSR
SO Doklady Akademii Nauk SSSR (1975), 220(3), 655-7 [Phys chem]
CODEN: DANKAS; ISSN: 0002-3264
DT Journal
LA Russian
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic Processes)
AB Developed sensitograms (D = 2.0) prepared from the film SP-1 were subjected to a 2nd exposure by an ir pulse laser (4 W, λ = 850 nm, pulse duration 2 + 10-7 sec) or a W-lamp with filters (λ = 700 - 1200 nm) to determine the energy required for decreasing the image d. to D = 1.0 after the 2nd development. The laser output was 2.1 + 107 erg/cm2. Absorption of .gtoreq.2 photons during each laser pulse which was shorter than the ionic stage of the latent image center was assumed for the decomposition of each latent image center. A calculated value of 1.25 + 105 laser pulses was required for the above reduction of the image d. as compared to the exptl. determined value of 1.43 + 105 pulses.
ST Herschel effect quantum yield
IT Herschel effect
(quantum yield of, in SP-1 photog. film by ir pulse laser exposure)

L3 ANSWER 62 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1975:24308 CAPLUS
DN 82:24308
ED Entered STN: 12 May 1984
TI Superlinear dependence of the spectrally sensitized photoconductivity and photographic responses on light intensity in some dyed silver bromide emulsions when T < 25 .deg.K
AU Kellogg, L. M.; Hailstone, R. K.; Liebert, N. B.
CS Res. Lab., Eastman Kodak Co., Rochester, NY, USA
SO Photographic Science and Engineering (1974), 18(5), 549-55
CODEN: PSENAC; ISSN: 0031-8760
DT Journal
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic Processes)
AB Some evacuated spectrally sensitized AgBr coatings, when exposed at <125°K, showed extreme low-intensity reciprocity failure for exposures in the dye absorption region, but not for exposures in the Ag halide absorption region. When log signal vs. log intensity plots were obtained from photocond. measurements at 77°K on these same coatings, slopes >1 were observed For some dye mols. 2 photons are required to transfer an electron from the dye to the AgBr conduction band at low temps. Two mechanisms that are consistent with the exptl. results are proposed.
ST reciprocity failure photog temp; spectral sensitization reciprocity failure; emulsion photog photocond
IT Photographic emulsions
(reciprocity failure in spectrally sensitized evacuated silver bromide, low-temperature, mechanism of)
IT Photography
(reciprocity failure in, low-temperature, mechanism of)

IT Photoconductivity and Photoconduction
(spectrally sensitized, of dyed silver bromide photog. emulsions, reciprocity failure in relation to)

L3 ANSWER 63 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1974:9008 CAPLUS
DN 80:9008
ED Entered STN: 12 May 1984
TI Nonreciprocity during laser exposure with major exposures
AU Kartuzhanskii, A. L.
CS Leningr. Inst. Sov. Torg. im. Engel'sa, Leningrad, USSR
SO Zhurnal Nauchnoi i Prikladnoi Fotografii i Kinematografii (1973), 18(4), 299-300
CODEN: ZNPFAG; ISSN: 0044-4561
DT Journal
LA Russian
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic Processes)
AB The 2-photon character of the processes in unsensitized photosensitive layers exposed to He-Ne laser radiation was studied. The nonreciprocity was studied for the long exposures of 10-3-103 sec using laser radiation of λ = 6328 Å. Total loss of nonreciprocity was observed for pos. cine layers, whereas there was only a partial loss for laser-irradiated diapos. slides.
ST laser exposure photog reciprocity
IT Laser radiation, chemical and physical effects
(on photog. reciprocity, of unsensitized photosensitive layers)
IT Photography
(reciprocity in, by laser exposure)

L3 ANSWER 64 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1973:78076 CAPLUS
DN 78:78076
ED Entered STN: 12 May 1984
TI Energy transfer in spectral sensitization
AU LuValle, James E.
CS Fairchild Camera Instrum. Corp., Syosset, NY, USA
SO Dye Sensitization, Symp. (1970), Meeting Date 1967, 207-18. Editor(s): Berg, W. F. Publisher: Focal Press Ltd., London, Engl.
CODEN: 26BIAZ
DT Conference
LA English
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic Processes)
AB The mechanism by which energy is transferred from a dye layer to a AgBr lattice, and the 2 opposing schools of electron transfer and energy transfer in spectral sensitization are discussed. On the basis of numerous computations it is concluded that a multiple-photon process for spectral sensitization is possible with 2 photons at 450-900 nm and 3 photons at 950-1400 nm if dye and acceptor mols. use the triplet state for energy storage. A multiple-photon process is impossible if the singlet state of the dye or acceptor mol. is used for energy storage.
ST spectral sensitization energy transfer
IT Energy transfer
(from dyes to silver halide lattices)
IT Photography
(sensitization in, energy transfer in)

L3 ANSWER 65 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1972:8901 CAPLUS
DN 76:8901
ED Entered STN: 12 May 1984
TI Action of laser radiation on photographic films
AU Kartuzhanskii, A. L.; Kruglova, M. D.; Sokolova, V. A.; Soltitskii, B. P.
CS Leningr. Inst. Sov. Torg. im. Engel'sa, Leningrad, USSR

SO Zhurnal Nauchnoi i Prikladnoi Fotografii i Kinematografii (1971), 16(5), 377-80
CODEN: ZNPFAG; ISSN: 0044-4561
DT Journal
LA Russian
CC 74 (Radiation Chemistry, Photochemistry, and Photographic Processes)
AB The differences found in the optical d. at various image d. and in the kinetics of development, bleaching, and fading with nonsensitized photog. layers exposed to He-Ne laser radiation and to λ = 636 nm radiation were ascribed to the 2-photon process. The latent image formed by this process consists of large development centers and thus provides steeper characteristic curves, more rapid development and slower bleaching and fading of the image formed. Pos. cine film MZ-3 and tech. film FT-20 were used.
ST cine film laser radiation effect
IT Laser radiation, chemical and physical effects
(in photography)
IT Photography
(laser radiation effect in)

L3 ANSWER 66 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1971:469216 CAPLUS
DN 75:69216
ED Entered STN: 12 May 1984
TI Anthracene fluorescence excitable by a ruby laser
AU Voropai, E. S.; Sarzhevskii, A. M.
CS Beloruss. Gos. Univ. im. Lenina, Minsk, USSR
SO Doklady Akademii Nauk BSSR (1971), 15(5), 398-400
CODEN: DBLRAC; ISSN: 0002-354X
DT Journal
LA Russian
CC 73 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)
AB The fluorescence spectra were measured by photoelec. and photog. methods. The exptl. set-up is described. Identical spectra were obtained in 1- and 2-photon excitation.
ST anthracene fluorescence
IT Fluorescence
(of anthracene, excited by laser beam)
IT Laser radiation, chemical and physical effects
(on fluorescence, of anthracene)
IT 120-12-7, properties
RL: PRP (Properties)
(fluorescence of, excited by laser beam)

L3 ANSWER 67 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1971:70205 CAPLUS
DN 74:70205
ED Entered STN: 12 May 1984
TI Ultrahigh-speed photography of picosecond light pulses
AU Duguay, Michel A.; Hansen, John W.
CS Bell Teleph. Lab., Inc., Murray Hill, NJ, USA
SO IEEE Journal of Quantum Electronics (1971), 7(1), 37-9
CODEN: IEJQA7; ISSN: 0018-9197
DT Journal
LA English
CC 74 (Radiation Chemistry, Photochemistry, and Photographic Processes)
AB Ultrashort (6 psec) green light pulses that pass through a light-scattering medium are photographed from the side by a camera positioned behind a shutter of 10-psec framing time. The shutter is a Kerr cell driven by ir pulses of 8 psec in duration. Color photographs show a bright spot on a dark background and reveal the unambiguous presence of well-isolated psec light pulses. This technique has many advantages over the 2-photon fluorescence display technique, such as higher sensitivity, wider spectral range, and easier

interpretation, and it can be used for the photog. measurement of ultrashort relaxation times in dielecs. and in fluorescent dyes.
ST high speed photog; relaxation times dielecs photog; dielecs relaxation times photog; light pulses photog; fluorescent dye relaxation times; dye fluorescent relaxation times
IT Photography
(ultrahigh-speed)

L3 ANSWER 68 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1971:69557 CAPLUS
DN 74:69557
ED Entered STN: 12 May 1984
TI Photographic recording of ultrashort impulses in two-photon luminescence
AU Korobkin, V. V.; Malyutin, A. A.
CS USSR
SO Kratkie Soobshcheniya po Fizike (1970), No. 8, 53-60
CODEN: KRSFAU; ISSN: 0455-0595
DT Journal; General Review
LA Russian
CC 73 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)
AB Photographic methods are reviewed for recording the ultrashort pulse length in the 2-photon luminescence process.
ST review photographic recording luminescence; photographic recording luminescence review; luminescence photographic recording review
IT Photography
(in luminescence, for recording ultrashort impulses)
IT Luminescence
(photographic recording of ultrashort impulses in two-photon)

L3 ANSWER 69 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1970:62019 CAPLUS
DN 72:62019
ED Entered STN: 12 May 1984
TI Efficiency of radiation detection by photographic films: state-of-the-art and methods of improvement
AU Bird, George R.; Jones, R. Clark; Ames, Allan E.
CS Res. Lab., Polaroid Corp., Cambridge, MA, USA
SO Applied Optics (1969), 8(12), 2389-405
CODEN: APOPAI; ISSN: 0003-6935
DT Journal
LA English
CC 76 (Nuclear Technology)
AB The performance of photographic films as radiation detectors has rested at a state-of-the-art plateau for some time. In terms of detection quantum efficiency (abbreviated DQE), this plateau is at about 1% for the best films, which 1% should be compared with 100% for an ideal photon counter. The phys. causes for the 100-fold discrepancy between reality and ideal performance are examined in detail: incomplete light absorption; a small inefficiency in converting photons into photoelectrons;; a large loss due to recombination of electrons with holes; a small loss dictated by a 4-atom threshold; a small loss dictated by random grain position; and a large loss from the use of a wide dispersion of grain sizes. These factors account quant. for substantially all of the discrepancy between reality and ideal performance. The recombination loss is a necessity that must ordinarily be tolerated to secure a good shelf-life for films. Part of the loss may be recouped by the well-known method of latensification. Films with a wide dispersion of grain sizes will have a higher DQE if the grains operate at a threshold of 2 processed photons instead of 4. Latensification permits one to approach the 2-atom threshold condition.
ST photog film detector; film photog detector; detector

photog film; radiation photog film detector
IT Radiation
(detectors, from photographic films)
IT Recombination of electrons and holes
(in photographic films, radiation detection in relation to)
IT Photographic films
(radiation detectors, theory of)

L3 ANSWER 70 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1970:36965 CAPLUS
DN 72:36965
ED Entered STN: 12 May 1984
TI Two-photon sensitization of photophysical processes in semiconductors
AU Ovsyankin, V. V.; Feofilov, P. P.
CS USSR
SO Proc., Int. Conf. Phys. Semicond., 9th (1968), Volume 1, 237-42. Editor(s): Ryvkin, S. M. Publisher: Publ. House "Nauka", Leningrad Branch, Leningrad, USSR.
CODEN: 21LIAG
DT Conference
LA English
CC 71 (Electric Phenomena)
AB The photosensitization of semiconductor crystals by adsorption of a layer of organic dye was studied. Polycryst. Ag halide AgI, AgBr, and AgCl deposited from solns., Ag halide photographic emulsions. Hg and Pb iodides, ZnO, and some others were investigated. All these semiconductor crystals, being excited at low temperature in the region of the absorption bands, show intense luminescence corresponding to the electron transition from the conduction band or from an exciton state either to the valence band or to some levels of impurity or defect origin. Cyanine dye as well as chlorophyll were used for sensitization. Two-photon luminescence was excited by irradiation with an incandescent lamp or a Xe lamp, at liquid N temperature, through filters cutting the shortwavelength part of the radiation. In all cases, the excitation bands, which correspond exactly to the absorption bands of the adsorbed dyes, appear in the excitation spectra of the sensitized crystals. The luminescence spectra excited in the region of sensitization coincide with those observed when excited in the intrinsic absorption region of a semi conductor. The intensity of luminescence of a number of pure semiconductor salts could b e given as I .apprx. $E\gamma$, where E is the excitation radiation d. In the region of the short-wavelength band of luminescence, $1.0 \leq \gamma \leq 1.5$. The deep cooling of the crystal to liquid He temperature increases the intensity of the luminescence excited in the region of sensitization by 2-3 orders o f magnitude. The possibility of a 1-photon process for the short-wavelength luminescence excited in the sensitized semiconductors by the long-wavelength radiation was ruled out in the light of the results of low-temperature expts. For 2-photon excitation, 2 mechanisms were suggested: (1) successive absorption of 2 quanta by the same element of a system passing through a long-lifetime intermediate state, and (2) cumulation of the energy of 2 primary excited interacting elements of a system onto one of the elements. Of these 2 the 1st one was rejected. The nonlinear dependence of the luminescence intensity on the exciting radiation d., which was not necessarily quadratic, favors strongly the cumulative mechanism. The sensitization of luminescence and other photoprocesses in semiconductors could be described as a process connected with a cumulation of energy of 2 or more excited elements of a system on one of the elements. The necessary condition for the feasibility of such a fundamental quantum-mech. process, A* + A* + A + A**, consists in the existence of a sufficiently strong interaction between excited states A* and approx. degeneracy, $E(2A^*) \approx E(A^{**})$. Different mechanisms of energy cumulation in sensitized semiconductors are discussed.
ST photosensitization semiconductor; semiconductor photosensitization; dye

adsorption semiconductor; silver halides semiconductor
IT Dyes, cyanine
(adsorption of, by metal halide semiconducting crystals, luminescence sensitization by)
IT Chlorophylls, properties
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(adsorption of, by metal halide semiconductor crystals, luminescence sensitization by)
IT Semiconductors, electric
(luminescence of binary halide, two-photon sensitization of, by adsorption of cyanine dyes)
IT Photographic emulsions
(luminescence of semiconducting, two-photon sensitization of, by adsorption of cyanine dyes)
IT Adsorption
(of cyanine dyes by metal halide semiconductor crystals, luminescence sensitization by)
IT Luminescence
(of metal halide semiconductor crystals, two-photon sensitization of, by adsorption of cyanine dyes)
IT Lead iodide
RL: USES (Uses)
(luminescence of semiconducting, two-photon sensitization of, by adsorption of cyanine dyes)
IT 37320-91-5, Mercury iodide
RL: USES (Uses)
(luminescence of semiconducting, two-photon sensitization of, by adsorption of cyanine dyes)
IT 1314-13-2, properties 7783-90-6 7783-96-2 7785-23-1
RL: PRP (Properties)
(luminescence of semiconducting, two-photon sensitization of, by adsorption of cyanine dyes)

L3 ANSWER 71 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1970:25958 CAPLUS
DN 72:25958
ED Entered STN: 12 May 1984
TI Rapid x-ray diffraction topography using a high-gain image intensifier
AU Lang, Andrew Richard; Reifsnider, K.
CS Univ. Bristol, Bristol, UK
SO Applied Physics Letters (1969), 15(8), 258-60
CODEN: APPLAB; ISSN: 0003-6951
DT Journal
LA English
CC 70 (Crystallization and Crystal Structure)
AB A method for performing rapid x-ray topography of reasonable resolution is presented. An x-ray phosphor is lens-coupled (magnification +2.5) to an image intensifier photocathode (EMI type 9694, bi-alkali photocathode, 48 mm usable diameter). A CsI(Tl) single-crystal x-ray phosphor, thick enough to absorb almost 100% of the incident MoKα x-rays, gives a naked-eye visible output with 25 photons/mm2 sec in the diffracted beam. With a fine-grain (8 μ median particle size) ZnS(Ag) polycryst. phosphor of 50% x-ray absorption efficiency, the sensitivity is 10 photons/mm2 sec; a lens magnification of 1 would bring the sensitivity to 2 photons/mm 2 sec. Projection topographs of natural diamond (5.2 mm wide, 220 reflection, Mo-Kα1 radiation) are given for comparison, taken both with the classical photographic method (11 hrs exposure) and with the proposed method (polaroid picture of television screen displaying image intensifier output, specimen traverse duration 12 sec, photographic processing 11 sec). Individual dislocations are made visible in less than 1 min experiment time.
ST topography x ray rapid; x ray topography rapid; dislocations x ray detn
IT X-rays, chemical and physical effects
(topography, image intensifier for)

L3 ANSWER 72 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1969:531025 CAPLUS
DN 71:131025
ED Entered STN: 12 May 1984
TI Fast highly sensitive films containing metallic compounds sensitive to photon, electron, or ion irradiation
IN Kaspaul, Alfred F.; Kaspaul, Erika E.
PA Hughes Aircraft Co.
SO Fr., 15 pp.
CODEN: FRXXAK
DT Patent
LA French
IC G03C; G11B
CC 76 (Nuclear Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	FR 1538789		19680906	FR 1967-120279	19670907
	GB 1195855			GB	
	US 3660087		19720502	US	19690707
PRAI	US		19660926		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
FR 1538789	IC	G03C; G11B
	IPCI	G03C; G11B
	IPCR	C23C0014-04 [I,A]; C23C0014-04 [I,C*]; G01D0015-14 [I,A]; G01D0015-14 [I,C*]; G03C0001-72 [I,C*]; G03C0001-725 [I,A]; G03G0005-08 [I,A]; G03G0005-08 [I,C*]; G03G0009-00 [I,A]; G03G0009-00 [I,C*]; G03G0013-06 [I,A]; G03G0013-06 [I,C*]; G03G0017-00 [I,A]; G03G0017-00 [I,C*]
US 3660087	IPCR	C23C0014-04 [I,A]; C23C0014-04 [I,C*]; G03C0001-705 [I,A]; G03C0001-705 [I,C*]; G03G0005-08 [I,A]; G03G0005-08 [I,C*]; G03G0009-00 [I,A]; G03G0009-00 [I,C*]; G03G0013-06 [I,A]; G03G0013-06 [I,C*]; G03G0017-00 [I,A]; G03G0017-00 [I,C*]
	NCL	430/089.000; 106/429.000; 106/480.000; 106/499.000; 346/025.000; 347/111.000; 347/120.000; 430/031.000; 430/084.000; 430/127.000; 430/942.000

AB The title films (100-1000 times more sensitive than previously described films) were prepared by dispersing metallic compds. sensitive to electromagnetic, electronic, or ion radiation, metallic halides or acetylacetonates, and Bi2O3 in binding agents. Nucleation sites were produced by exposure to 104 ergs/cm.2 with photons and to 20 ergs/cm.2 exposure with electrons. Thus, a film was prepared by grinding a mixture 35 g. ZnO, 0.018 g. CuCl, 9 g. Pliolite S-7, and 50 ml. PhMe for 1.5 hrs. with 100 g. of small glass beads. A layer of the resulting mixture was coated on aluminized paper with a knife at a rate of 2 cm./sec. Dry films 28 and 7.6 μ thick were obtained from wet films 100 and 25 μ thick, resp. On developing latent images formed on the films, a resolution of >228 line pairs/mm. was attained

ST electron detection film; photon detection film; ion detection film; radiation detection film; detection radiation film; film radiation detection

IT Electron beams
Ions in gases
(detection of, photographic films for)

IT Radiation
(detectors, photographic films for)

IT Photographic films
(for radiation detection)

IT Transition metal compounds
RL: PROC (Process)
(with pentanedione, radiation detection by photographic film

containing)
IT Aluminum, compound with beryllium (2:3)
Beryllium, compound with aluminum (3:2)
RL: DEV (Device component use); USES (Uses)
(photographic film containing, for radiation detection)
IT 554-13-2 1304-76-3 1310-53-8 1314-13-2, uses and miscellaneous
1314-98-3, uses and miscellaneous 3264-82-2 7646-78-8 7681-65-4
7718-54-9 7786-81-4 7787-70-4 10025-73-7 10028-18-9 10043-11-5
13395-16-9 14024-50-1 14024-63-6 18282-10-5 20548-54-3
RL: DEV (Device component use); USES (Uses)
(photographic film containing, for radiation detection)
IT 123-54-6D, 2,4-Pentanedione, transition metal complexes
RL: DEV (Device component use); USES (Uses)
(photographic films containing)
IT 1306-23-6, uses and miscellaneous 1309-48-4, uses and miscellaneous
1312-43-2 1314-61-0 3486-35-9 7790-75-2 12014-10-7, Cadmium
niobium oxide (CdNb2O6) 12030-14-7 12031-63-9 13463-67-7, uses and
miscellaneous 13774-18-0
RL: DEV (Device component use); USES (Uses)
(photographic films containing, for radiation detectors)

L3 ANSWER 73 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1969:73801 CAPLUS
DN 70:73801
ED Entered STN: 12 May 1984
TI Investigation and demonstration of single-crystal and powder diffraction by using zero-power β-excited x-ray and iron-55 isotopic sources
AU Preuss, Luther E.; Toothacker, William S.; Bugenis, Claudius K.
CS Edsel B. Ford Inst. for Med. Res., Detroit, MI, USA
SO Advances in X-Ray Analysis (1968), Volume Date 1967, 11, 326-31
CODEN: AXRAAA; ISSN: 0376-0308
DT Journal
LA English
CC 79 (Inorganic Analytical Chemistry)
AB Diffraction data (powder or single-crystal) with the use of zero-power isotopic sources would provide important information on such systems and may have applications in anal. For this work, 100-mCi. 55Fe, accelerator-produced, and 4-mCi. 147Pm-Cu β-excited sources were fabricated. Powder-diffraction efficiency with the use of a special diffractomet r adapted to these sources is about 10-5 (calculated) for the Mn Kα x-rays (55Fe) on the NaCl 200 plane. This beam flux at 3 times natural background intensity was exptl. achieved by using photon spectrometry with proportional counters and multichannel anal. The LiF diffraction pattern was demonstrated with intensities roughly in agreement with prediction. LiF single-crystal diffraction intensity (200 plane) exceeded by 250-fold that of powder. Powder main-peak intensity (θ = 31.5°) produced 9.2 photons/min. at the receiving slit vs. 2.3 + 103 events for the single crystal. This single-crystal intensity with 60-sec. runs provided a peak resolution of 0.29° full width at half maximum The 1st order Kα, Kβ1 1st order, and Kβ1 2nd order beams (θ = 31.5°, 28.3°, and 71.6° resp.) were demonstrated, with 1900 events per min. in the main peak (Kα). X-ray no-screen emulsion was used to study photographic recording on the LiF single crystal with exposures as short as 2.5 hrs. A 2-in.-diameter camera, newly designed for the 55Fe source, is collecting further emulsion data. The isotopic source is stable, highly predictable in intensity, reliable, and compact. Requiring zero power, it has a potential for remote applications. Where its low output can be tolerated, it may hold promise for anal., especially where its size, weight, and stability are important criteria. Source work here points to possible 55Fe improvement in photon output of 102 over the source described here. Such an increase may make certain special anal. applications feasible.
ST diffractions analysis; x ray diffractions
IT Analysis

(x-ray, zero-power isotope sources for)
IT 14380-75-7, uses and miscellaneous 14681-59-5, uses and miscellaneous
RL: USES (Uses)
(in x-ray diffraction, as zero-power source)

L3 ANSWER 74 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1968:414822 CAPLUS
DN 69:14822
ED Entered STN: 12 May 1984
TI Coherent fluorescence from zinc sulfide excited by two-photon absorption
AU Wang, Shyh; Chang, C. C.
CS Univ. of California, Berkeley, CA, USA
SO Applied Physics Letters (1968), 12(5), 193-5
CODEN: APPLAB; ISSN: 0003-6951
DT Journal
LA English
CC 73 (Spectra and Other Optical Properties)
AB Emission at room temperature of coherent radiation (centered at 3497 A.) was observed from a hexagonal ZnS crystal which was excited through 2-photon absorption of radiation from a giant-pulse ruby laser. Corning glass filters were used so that only the red radiation from the ruby was allowed to pass on to the crystal. The spectral width decreased from 75 A. to 12.8 A. above a threshold ruby-laser power of 35 Mw./cm.2 Photographic pictures showed a beam divergence of less than 1°. The 2-photon transition probability is equal to ω = 7 + 10-4I2 transitions/sec.-cm.3, where I is the intensity of the ruby-laser beam. With the estimate ω ≥8 + 1026, I = 1015 ergs/sec.-cm.2 or 100 Mw./cm.2 is obtained, in fair agreement with the observed threshold of 35 Mw./cm.2 At a beam intensity of I = 50 Mw./cm.2, the absorption coefficient of the ruby-laser beam is K = 2 cm.-1 The calculated result is in good agreement with the observed fact that the laser action took place almost along the whole length of the ZnS crystal.
ST coherent fluorescence Zn sulfides; fluorescence coherent Zn sulfides; sulfides Zn coherent fluorescence; zinc sulfides fluorescence
IT Laser radiation
(absorption (two-quantum) by zinc sulfide, zinc sulfide laser emission in relation to)
IT Photons
(absorption of two, by zinc sulfide, laser emission in relation to)
IT Lasers
(zinc sulfide, excited by two-photon absorption)
IT 1314-98-3, properties
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(laser emission by, optical absorption of two photons in relation to)

L3 ANSWER 75 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1968:100573 CAPLUS
DN 68:100573
ED Entered STN: 12 May 1984
TI Photographic studies of laser-induced pressure impulses in liquids
AU Carome, Edward F.; Carreira, E. M.; Prochaska, C. J.
CS John Carroll Univ., Cleveland, OH, USA
SO Applied Physics Letters (1967), 11(2), 64-6
CODEN: APPLAB; ISSN: 0003-6951
DT Journal
LA English
CC 73 (Spectra and Other Optical Properties)
AB Shadow photography techniques have been used to study various effects produced in transparent liquids by the focused beam from a Q-spoiled ruby laser. The intense spherical acoustic transients generated in water and other pure liquids (CCl4) when dielec. breakdown occurs have been examined

In solns. of benzanthracene in C6H6, in which other workers have detected 2-photon absorption, a linear region is strongly affected by the laser beam and cylindrical acoustic disturbances have been observed. 8 references.

ST LASER PRESSURES LIQS; CARBON TETRACHLORIDE LASER EFFECT; PRESSURES LASER LIQS; BENZANTHRACENE LASER EFFECT; LIQS LASER PRESSURES

IT Photons
(absorption of two, in benz[a]anthracene-benzene solns. in laser beams, photographic evidence of acoustic disturbances in relation to)

IT Electric breakdown
(in liqs. irradiated by lasers)

IT Photography
(of laser-induced pressure impulses in liqs.)

IT Laser radiation, chemical and physical effects
(pressure impulses in liqs. induced by, photographic studies of)

IT 56-55-3
RL: PRP (Properties)
(spherical acoustic transients in laser-irradiated benzene solns. of)

IT 56-23-5, properties 7732-18-5
RL: PRP (Properties)
(spherical acoustic transients in laser-irradiated, photography of)

L3 ANSWER 76 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1966:72061 CAPLUS
DN 64:72061
OREF 64:13503a-d
ED Entered STN: 22 Apr 2001
TI Multiphoton processes in dielectrics
AU Floux, Francis; Nelson, Pierre; Veyrie, Pierre
CS C.E.A. Centre Etudes Limeil, Villeneuve-Saint-Georges, Fr.
SO Compt. Rend. (1965), 261(21, Groupe 6), 4366-8
DT Journal
LA French
CC 9 (Electric and Magnetic Phenomena)
AB Expts. verified the prediction that the ionization thresholds for metals under laser-beam attack are very high, but are relatively weak for dielecs. A metal of reflecting power, R, and of penetration depth l = $\lambda/2\pi\xi$, was considered. The photons traversing the metal are absorbed, having an energy, E= .plcnst.ω + i.plcnst.(1/c)-1 = .plcnst.ω(1 + iξ). The critical photon d. (N1) = n0(1 + ξ2)3/2. The breakdown threshold (I8) = (W/hv)[1/(1 - R)](1 + ξ2)3/2Io, where I is the critical brilliance. For Ag, with λ = 0.7 μ, the threshold is of the order of 1014 w./cm.2, a value not yet attained exptl. For dielecs. under laser beam attack, the breakdown threshold is expressed by I8 = (W/hv)(1/h4)Io. Exptl., the laser beam was directed into glass containing Nd being focused either in the interior or at the surface. The breakdown was located by photographic or visual examination of the bubbles, and by measurement of the beam transmission. The abnormal absorption threshold of the light coincided with the appearance of the bubbles. The losses by secondary reflection above the focal point were measured during the preliminary expts. The power and divergence of the beam were carefully measured. The illumination was then calculated as a function of the lens focal length. calculated, measured; water, I2 = 3 + 109 w./cm.2, 2.5 ± 0.5 +109; ruby and sapphire, I = 109 w./cm.2, 1.05 ± O. 2.5 + 109; glass, I = 1.9 + 105 w./cm.2; 1.5 ± 0.3 +109 These thresholds corresponded to the appearance of bubbles in the medium (for water and glass), or to pit formation at the interface (for glass and rubies). Thus, besides certain cumulative thermal phenomena which limit the life of the rods, instantaneous destructions are produced which are thought to be initiated by multiphoton phenomena. Since the d. of photons in the laser interior is greater than the d. of the emerging beam, the breakdown is produced at output intensities of .apprx.5 + 108 w./cm.2,which was

exptl. observed.
IT Lasers and (or) laser
(dielectrics and metals irradiated by, elec. breakdown and ionization in)
IT Glass
(elec. breakdown of Nd-containing, irradiated by laser light.)
IT Photons
(in dielectrics irradiated by laser light)
IT Ionization (in solids)
(in metals irradiated by laser light, elec. breakdown and)
IT Electric breakdown
(of metals irradiated by laser light)
IT Dielectrics
(photon (multi-) processes in, irradiated by laser light)
IT 7440-00-8, Neodymium
(elec. breakdown of glass containing, irradiated by laser light)
IT 12174-49-1, Ruby
(elec. breakdown of, by laser light)
IT 1317-82-4, Sapphire 7440-22-4, Silver 7732-18-5, Water
(elec. breakdown of, irradiated by laser light)

L3 ANSWER 77 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1965:41489 CAPLUS
DN 62:41489
OREF 62:7308g-h
ED Entered STN: 22 Apr 2001
TI Fine structure of the energy spectrum for the γ quanta formed by 18.7-Gev. protons on the nuclei of photographic emulsions
AU Zhdanov, G. B.; Tret'yakova, M. I.; Shcherbakova, M. N.
SO Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki (1964), 47(5), 1664-7
CODEN: ZETFA7; ISSN: 0044-4510
DT Journal
LA Russian
CC 12 (Nuclear Phenomena)
AB The fine structure of the γ-quanta energy spectrum was studied by analyzing the spectrum for the e pairs in an Il'ford-G5 emulsion exposed to 19.6-Gev./c p for the energy range 140-950 Mev. (222 pairs after correcting for pseudo-scattering). No peaks were observed in the spectrum which can be ascribed to processes of 2-photon decay of η-mesons as Lyubimov found at lower particle energy (Lyubimov, et al., ibid. 44(2), 760-62(1963)).
IT Gamma rays
(from proton bombardment, of photographic emulsion nuclei)
IT 12587-47-2, Beta ray
(from bismuth-210, matrix elements for)
IT 183748-02-9P, Electron
RL: PREP (Preparation)
(pair production, in photographic nuclear emulsion bombarded by protons, γ-ray spectra in relation to)
IT 12586-59-3, Protons
(photographic-nuclear-emulsion bombardment by, γ-rays from)

L3 ANSWER 78 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1962:447224 CAPLUS
DN 57:47224
OREF 57:9386a-c
ED Entered STN: 22 Apr 2001
TI Photographic characteristic of a monolayer
AU Candler, C.
CS South Australian Inst. Technol., Adelaide
SO Journal of the Optical Society of America (1962), 52, 300-12
CODEN: JOSAAH; ISSN: 0030-3941
DT Journal
LA Unavailable

CC 11 (Radiation Chemistry and Photochemistry)
AB If sensitive areas exist in unexposed crystals, the number of development centers formed on exposure should be given by the Poisson law, a conclusion contrary to the exptl. facts. The facts are explainable if a development center is formed in a diat. reaction triggered by P photons. The fraction of the grains developable, n, after an exposure E is given by (sE)P = n/(1 -- n), where s is the reaction cross section when E is measured in photons/unit area. The photon number P increases with crystal size and can be nonintegral. In 2 emulsions examined, s is proportional to crystal volume; in a 3rd case, to surface area. Assuming that 2 Ag atoms produce a development center, it is possible to explain the absorption of 2 photons contiguous in space and nearly coincident in time, sensitization of grains, and reciprocity failure.
IT Photography
(latent image, photon absorption and monolayer properties in relation to)
IT Crystals
(size of, of photographic emulsions, photon absorption in relation to)

L3 ANSWER 79 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1959:71359 CAPLUS
DN 53:71359
OREF 53:12897c-f
ED Entered STN: 22 Apr 2001
TI Characteristics of photographic emulsions exposed to constant fluxes of electrons or light
AU Vernier, Pierre
SO Compt. rend. (1957), 244, 3047-50
DT Journal
LA Unavailable
CC 5 (Photography)
AB Photometric measurements (Struve, Sky and Telescope 1955, 186) have shown that, for 1 grain developed on a photographic plate, an average of 1000 photons is received. On the other hand, 1 electron can render certain grains developable. When a particle loses energy in a grain of AgBr, it can promote a transformation in a sensitive center. If this same center has undergone r transformations, a development center is formed which enables the whole grain to be developed. The value of r, which depends on the center and the grain, exhibits (excluding chemical fogged grains) a min. r0. If the density, d, of the emulsion (proportional to the weight of Ag/unit surface) is plotted against time of exposure, θ, the probability, ω, that a given sensitivity center becomes a development center can be calculated It was found that the ratio d/θr0 tends towards a definite value as θ tends towards zero and remains constant when r = 1. The math. deductions are compared with observed characteristics of a plate exposed to electrons of 10-25 kv. The plot of d against exposure was linear in this experiment and this is considered to indicate that the action of 1 electron is always sufficient to form a development center. Similar data for light show that, for a substantial proportion of sensitivity centers, two photons are sufficient. The difference between these 2 photons and the 1000, claimed by Struve (loc. cit.), is presumably that the latter are not effectively absorbed by the emulsion.
IT Photography
(effect of electrons and light quanta on)
IT 7785-23-1, Silver bromide
(effect of electrons and light on)
IT 183748-02-9, Electron
(photography of)

L3 ANSWER 80 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1957:38322 CAPLUS
DN 51:38322
OREF 51:7188d-f

ED Entered STN: 22 Apr 2001
TI Interaction of very high energy in cosmic radiation
AU Lohrmann, E.
CS Univ. Bern, Switz.
SO Z. Naturforsch. (1956), 11a, 561-79
DT Journal
LA Unavailable
CC 3A (Nuclear Phenomena)
AB A nuclear interaction of high energy of the type 5 + 30 p is described, which was found on a plate exposed in 29 km. altitude. From the resulting cascade and secondary interaction of the formed particle the total energy is estimated at least to be 1100 b.e.v. From the soft cascade 3 photons are formed with energies between 40 and 80 b.e.v. The cascades which formed from them show a mean free path for direct pair formation of 50+50-23 mm. in the photographic emulsion. A secondary star of the type 3 + 55 n was found 26 mm. from the 1st interaction. The primary energy was calculated to be 150 b.e.v. Furthermore, a star of the type 2 + 12 p is described in which an antiproton is produced.
IT Cosmic rays
(nuclear interactions in, high-energy)

L3 ANSWER 81 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1956:3825 CAPLUS
DN 50:3825
OREF 50:695d-e
ED Entered STN: 22 Apr 2001
TI High-energy electromagnetic phenomena in cosmic radiation
AU Koshiba, M.; Kaplon, M. F.
CS Univ. of Rochester, Rochester, NY
SO Physical Review (1955), 100, 327-39
CODEN: PHRVAO; ISSN: 0031-899X
DT Journal
LA Unavailable
CC 3A (Nuclear Phenomena)
AB cf. C.A. 49, 5253c. Isolated high-energy electron showers in photographic emulsion were investigated. In 16 cases of isolated electron showers observed to originate from single electron pairs of energy >1 b.e.v., 2 cases were found to be anomalous in the sense that they seem to have been initiated by >2 photons; one of the 2 is analyzed in detail. The discrepancy between the exptl. observations and theoretical predictions on the trident process found previously is confirmed.
IT Photons
(-electron showers, emulsion study of)
IT Cosmic rays
(showers of, emulsion study of)
IT 183748-02-9, Electron
(-photon showers, emulsion study of)

L3 ANSWER 82 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1952:35349 CAPLUS
DN 46:35349
OREF 46:6010i,6011a
ED Entered STN: 22 Apr 2001
TI Emulsion cloud-chamber study of a high-energy interaction in the cosmic radiation
AU Kaplon, M.; Peters, B.; Ritson, D. M.
CS Univ. of Rochester, NY
SO Physical Review (1952), 85, 900-3
CODEN: PHRVAO; ISSN: 0031-899X
DT Journal
LA Unavailable
CC 3A (Nuclear Phenomena)
AB cf. C.A. 46, 4392d. A new technique is described for studying high-energy

interactions utilizing photographic emulsions as detectors. A detailed study was made with this technique of one very high energy mixed shower. Evidence is obtained for the multicore structure of the soft component at depths of several radiation lengths in this mixed shower, along with the existence of a finite lifetime for the decay of the neutral π-meson into 2 photons of the order of 1 + 10-14 sec.

IT Mesons
(decay of neutral π)

IT Cosmic rays
(interactions, high-energy)

L3 ANSWER 83 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1951:49290 CAPLUS
DN 45:49290
OREF 45:8371c-g
ED Entered STN: 22 Apr 2001
TI Radiations from hafnium
AU Burson, S. B.; Blair, K. W.; Keller, H. B.; Wexler, S.
CS Argonne Natl. Lab., Chicago
SO Physical Review (1951), 83, 62-8
CODEN: PHRVAO; ISSN: 0031-899X
DT Journal
LA Unavailable
CC 3A (Nuclear Phenomena)
AB The 70-day, 45-day, 5.5-hr., and 19-sec. activities of Hf were investigated by spectrometric, spectrographic, absorption, and coincidence methods. From activation expts. on separated Hf isotopes, assignments are made: 70-day, 72Hf175; 19-sec., Hf179*; 5.5-hr., Hf180*; 45-day, Hf181. Photographic spectrograms of the internal conversion electrons associated with 70-day Hf175 indicated the presence of 4 γ-rays. The association of Lu work functions with the various lines confirmed the hypothesis of K electron capture in Hf175 leading to an excited state of Lu175. An investigation of the internal conversion electron spectrum in a 180° β-ray spectrometer indicated the presence of 1 β-ray of 0.42 $\pm$ 0.01 m.e.v. and 5 γ-rays. There is an upper limit of 1% on any more energetic β-ray. Single and coincidence absorptions in Pb and Al showed the 3 strongest γ-rays and the single β-ray. Delayed coincidence absorption indicated that the 0.42 m.e.v. β-ray leads directly to the 22-μsec. metastable state of Ta181. No delayed γ-coincidences were found: all γ-rays appear to follow the 22-μ sec. state. Addnl. coincidence measurements showed internal conversion electron groups corresponding to 3 of the γ-rays. The decay scheme proposed by Chu and Wiedenbeck (C.A. 43, 4124b) as modified by Cork, et al. (C.A. 44, 6738a) was confirmed. Activation of extremely pure Hf showed an activity of 5.5 hrs. in addition to the 45-day period. The assignment of this activity to Hf was confirmed by chemical methods. No delayed coincidences were observed. Internal conversion electron groups corresponding to 5 γ-rays were resolved; absorption in Pb indicated 3 of the photon components. Al absorptions indicated coincidences between internal conversion electron groups from at least 2 of the γ-rays. Activation of separated isotopes shows that this activity is an isomeric state of Hf180. A photographic spectrogram of the internal conversion electrons showed the presence of a single γ-ray; the association of Hf work functions with the 4 lines observed verified the hypothesis of an isomeric state in Hf179.

IT Gamma rays
(from hafnium)

IT 183748-02-9, Electron
(capture of orbital and emission of internal-conversion, by Hf isotopes)

IT 14998-63-1, Rhenium, isotope of mass 186
(decay of)

IT 12587-47-2, Beta ray

(from hafnium)
IT 7439-94-3, Lutetium
(from hafnium-175 decay)
IT 7440-25-7, Tantalum
(from hafnium-181 decay)
IT 12587-47-2, Beta ray
(from rhenium-186)
IT 7440-58-6, Hafnium
(isotopes of, decay of)

L3 ANSWER 84 OF 84 CAPLUS COPYRIGHT 2007 ACS on STN
AN 1934:47490 CAPLUS
DN 28:47490
OREF 28:5752e-h
ED Entered STN: 16 Dec 2001
TI Positive electrons: Focussing of beams, measurement of charge-to-mass ratio, study of absorption and conversion into light
AU Thibaud, Jean
SO Physical Review (1934), 45, 781-7
CODEN: PHRVAO; ISSN: 0031-899X
DT Journal
LA Unavailable
CC 3 (Subatomic Phenomena and Radiochemistry)
AB cf. C. A. 28, 3297.3. A method (method of the trochoid) is described for concentrating and focussing weak electron beams. Displacement of the beam so formed by an addnl. field enables the recognition of the sign of the charge and to estimate the charge-to-mass ratio with an accuracy of 15%. Absorption expts. in thin films of Pt and a large number of other elements have been made of pos. and neg. electrons from a source composed of a radioactive substance emitting strong γ-rays and enclosed in Pb. It is shown that the absorption follows an exponential law. When the thickness of the absorber is increased beyond about 500 mg./sq. cm. it becomes evident that the imprint made on a photographic plate behind the absorber is partly due to something else than the transmitted electron. This something else is considered to be radiation; with neg. electrons it consists entirely of secondary x-rays; with pos. electrons there is an addnl. component ascribed to the merging of the pos. with neg. electrons and their conversion into photons whose energy is about 0.5 m. e. v. and whose intensity implies that there are about 2 photons per pos. electron. These last results agree with Dirac's theory. Pos. electrons have been observed under conditions where they seem to proceed from radioactive substances.
IT Photons
(positrons and)
IT 183748-02-9, Electron
(concentrating and focusing)
IT 12585-85-2P, Positrons
RL: PREP (Preparation)
(preparation of)

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L3 84 S L1 AND L2

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